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JEW 1635

TRANSMITTAL LETTER
(General - Patent Pending)

Docket No.
116566-052

In Re Application Of: BRAZZELL et al.

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/080,797	21 February 2002	J. Angell	29180	1635	9942

Title: METHOD FOR TREATING OCULAR NEOVASCULARIZATION

COMMISSIONER FOR PATENTS:

Transmitted herewith is:

Second Letter the Examiner (Nine (9) pages); Six (6) references; and Second Declaration of Sheila Connelly (Four (4) pages).

in the above identified application.

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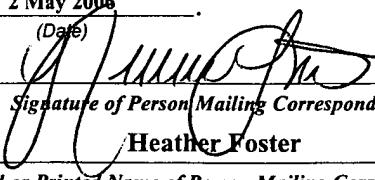
Dated: 2 May 2006

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Heather Foster

Typed or Printed Name of Person Mailing Correspondence

CC:



IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicants: Brazzell et al.

Conf. No.: 9942

Application No.: 10/080,797

Art Unit: 1635

Filed: 21 February 2002

Ex.: J. Angell

Title: METHOD FOR TREATING OCULAR NEOVASCULARIZATION

SECOND LETTER TO THE EXAMINER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Further to the recent filing of the Request for Continued Examination, which requested entry of the Amendment and attending documents filed in response to the Final Office Action, along with the executed Declaration to support the Petition to Correct Inventorship, applicants have the following additional comments to support their position that WO 99/26480 is not an effective reference against the claims of the instant application, including the Second Declaration of Connelly.

The issue relates to whether WO 99/26480 (hereinafter "Leboulch et al."), is an enabling reference and thus, places the disclosure taught therein into the hands of the artisan such that the artisan is in possession of the teachings therein and can practice the use of endostatin, in general, and more specifically, the use of endostatin for treating non-cancer conditions of the eye.

Applicants have maintained that is not the case and provide additional legal authority and argument to support their position.

**A REFERENCE MUST ALLOW THE PUBLIC TO HAVE
POSSESSION OF THE TEACHINGS THEREIN**

a) As noted in MPEP §2121.01, the test for determining whether a prior art disclosure is sufficient and effective is whether the reference contains an enabling disclosure. *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1964). A reference is considered to contain an enabling disclosure if the public was in possession of the disclosed subject matter before the date of invention. Such possession is effective if the artisan could have combined the description in the publication with her or his own knowledge to make the claimed invention. *In re Donohue*, 766 F.2d 531, 226 USPQ 619 (Fed. Cir. 1985).

In re LeGriee, 301 F.2d 929, 49 CCPA 1124 (1962) is instructive on that point. The case relates to the question as to whether in the context of plant patents, a mere publication describing the claimed plant without teaching how to make and how to reproduce the new variety was enabled by merely a description of the claimed plant. LeGriee had filed plant patent applications for a particular type of rose. The applications were rejected over printed publications in England more than one year prior to the filing date of the applications wherein the publications described LeGriee as having made the rose variety and showed color pictures of the roses, but no more.

The issue was framed as whether the rose was described in those printed publications to the extent that the publications were considered to convey sufficient knowledge of the roses to the public such that the public could in fact make the roses.

The CCPA concluded that a reference must provide in full, clear and exact terms so as to enable any person skilled in the art of science to which it pertains to make, construct and practice the claimed invention. Mere vague and general representations will not support the conclusion of anticipation as the knowledge supposed to be derived from the publication must be sufficient to enable those who are skilled in the art or science to understand the nature and operation of the invention and to carry it into practical use. The publication, to be of any effectiveness to support an assertion of anticipation, must be an account of a complete and operative idea capable of being put into practical operation. (emphasis ours)

Thus, LeGriece argued that the England publications in no way enabled a third party to make the roses for which a patent was sought. Due to the intricate nature of making particular new varieties of flowering plants, a mere photograph cannot and does not enable a third party to possess any one particular variety. The CCPA found that the particular rose described in the two applications was produced by sexual propagation and the chance arrangement of the almost infinite numbers of various genes influencing flower color found in each parental line. The England publications did not disclose the parentage of the particular variety. Thus, artisans would not know how to reproduce the specific variety of LeGriece:

Therefore, the CCPA held that the mere photograph of the floral variety without providing the specific parental strains needed to make that variety is not an enabling reference.

In re Hoeksema (*supra*) affirms that holding. The Hoeksema case related to whether a publication which teaches a structure but not how to make that structure is an enabling reference as to that structure.

Hoeksema claimed particular furanosides that had a particular substituent. The claims were rejected over a patent which disclosed furanosides but with a different substituent. Hoeksema had submitted a Declaration stating that there is no teaching in the relied on reference that the particular claimed compound would be or could be made.

The CCPA found that if there is no evidence that a method can be used to make a particular compound, then there is no way to conclude that the compound is in the possession of the public. Stated in another way, even though a particular chemical compound was recited in a reference, that reference is not enabled and not an effective reference as to the compound if there is no reproducible teaching of how to make that compound either in that reference or in the public domain at the time of the invention.

b) In the instant application, Applicants have stated that Leboulch et al. do not provide an enabling description of how to use endostatin and particularly how to use endostatin as an anti-angiogenic agent to treat non-cancer conditions of the eye. Leboulch et al. do not describe how to achieve that goal, and thus, Applicants have argued that Leboulch et al. do not put the artisan in possession of the teachings of WO 99/26480 when that document was publicly disclosed. Moreover, that conclusion did not change up through the earliest priority date of the instant application in light of continued experimentation trying to prove that endostatin does have some biological activity of commercial benefit. At the very least, at the time of the instant invention,

there was no evidence that endostatin had any anti-angiogenic effect for treating non-cancer conditions of the eye.

**AN INOPERATIVE DISCLOSURE OR ONE THAT ONE DOES NOT
ACHIEVE THE DESIRED RESULT IS NOT ENABLING**

a) U.S. v. Adams, 383 U.S. 39, 148 USPQ 479 (1965) chimes in on an operability, lack of utility and lack of enablement of a reference.

The case related to whether a dry battery that had an electrode of cuprous chloride which was activated on the addition of water thereto, was anticipated by a reference that taught a different sort of battery that contained a number of different agents which theoretically could produce cuprous chloride. The alleged anticipating reference related to a battery which had as the cathode, a copper or carbon electrode faced with a paste which included among other things, cuprous chloride. The paste is mixed with hot sulfuric acid before application on the electrode.

It was stated on the record that it was unknown whether that prior art battery when put in operation actually would contain any cuprous chloride. Moreover, there was evidence of record that on attempting to assemble a battery according to the teachings of that reference, the prior art battery was inoperable.

The Supreme Court held that because it was even open to doubt where the cuprous chloride was found as a functional element in the battery of the prior art and there was uncontested evidence that the battery of the prior art was inoperable and not reproducible, the relied-on document could not be considered to be a bar to patentability of the invention now claimed. The Supreme Court stated:

“An inoperable invention or one which fails to achieve its intended result does not negative novelty.”

In re Donohue (*supra*) also is relevant to the position of applicants.

During prosecution of the Donohue application, a Declaration was filed which stated that the particular compounds of interest were never synthesized. In light of that evidence, Donohue concluded that the publication was not enabling as to the particular compounds claimed by Donohue.

“In those cases, the references were deemed insufficient, because they stated that attempts to prepare the claimed compounds were unsuccessful. Such failures by those skilled in the art (having possession of the information disclosed by the publication) are strong evidence that the disclosure of the publication was non-enabling.”

Thus, the Federal Circuit held that to be an enabling reference, that reference, in light of the state of the art, must be operable and must at the very least teach how to make a particular compound (in the context of the instant application, by extrapolation, how to use a particular compound). (emphasis ours)

As stated in *Process Control Corporation v. HydReclaim Corporation*, 190 F.3d 1350, 52 USPQ 2d 1029 (Fed. Cir. 1999), if a patent claim fails to meet the utility requirement because it is not useful or operative, then it also fails to meet the how to use aspect of the enablement requirement. Thus, if subject matter is inoperable, then any publication describing that subject matter would fail to meet the utility requirement of §101 and the enablement requirement §112.

b) The evidence of record is clear that the teachings of Leboulch et al., the reference itself of in view of the state of the art, endostatin is inoperable as an

anti-angiogenic compound. There is ample evidence of record that Leboulch et al. cannot be replicated and is inoperative. The very individuals associated with Leboulch et al. could not replicate the teachings of the reference. That evidence supports the conclusion that the teachings of Leboulch et al. are not enabled.

Thus, clearly, Leboulch et al. is not an effective reference against the instant invention.

THE TRUTHFULNESS OF A DISCLOSURE MUST BE VALIDATED

a) MPEP 2121.02 states that one of ordinary skill in the art must be able to make or synthesize a particular compound or composition to constitute enabling prior art.

In re Cook, 439 F.2d 730, 169 USPQ 298 (CCPA 1971) teaches that §112 requires that any teaching be true for it to be enabling. In that case, Cook had failed to establish the truthfulness of assertions in their application following a challenge of operability and enablement by the Examiner.

b) Evidence that individuals associated with Leboulch et al., including Dr. Leboulch, were unable to replicate the very teachings of their document is of record. Hence, not only is there evidence that one skilled in the art could not and cannot practice the teachings of Leboulch et al., the very individuals associated with WO 99/26480 themselves could not replicate their own teachings.

There can be no better evidence that WO 99/26480 is not enabled and thus is not an effective reference against the claims of the instant application.

Attached hereto is the Second Declaration of Connelly who extends a discussion of the state of the art with respect to endostatin and to Leboulch et al.

In the Second Declaration, Dr. Connelly stated that Leboulch et al. provide a very superficial teaching of the general state of the art with respect to gene therapy without providing any particularized details of how to obtain any anti-angiogenic effect from endostatin. Moreover, Leboulch et al. is directed primarily to treatment of solid tumors. Dr. Connelly noted that there is mere passing reference by virtue of a word or two of treating the eye. There is no particularized teaching of using endostatin to treat a non-cancer condition of the eye.

Dr. Connelly concluded that she would not be able to use endostatin for treating a non-cancer condition of the eye because Leboulch et al. is not enabled, based on Leboulch et al. *per se*, or in view of the state of the art, which has not proved endostatin.

Thus, it can be concluded that WO 99/26480 is not an operable or an enabling reference as to use of endostatin for treating a non-cancer condition in the eye.

Accordingly, WO 99/26480 cannot and does not anticipate the instant invention. Moreover, because WO 99/26480 is inoperable and not enabled, and none of the secondary references demonstrate actual successful use of endostatin for treating a non-cancer condition of the eye, and there remains to date, questions as to the use of endostatin for treating cancer, *prima facie* cases of obviousness relying on WO 99/26480 as the primary reference have not been made. Thus, all of the obviousness rejections also can be removed.

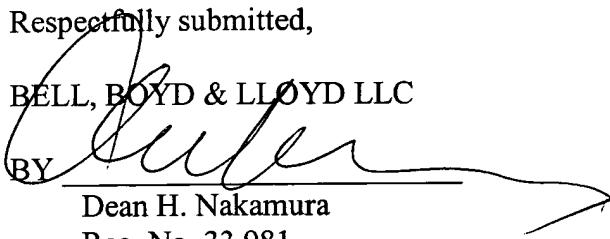
CONCLUSION

The claims now are in condition for allowance. Withdrawal of all rejections and passage of the application to allowance are requested respectfully. If any question remain, the Examiner is requested respectfully to contact the undersigned at the local exchanged noted hereinbelow. The Commission hereby is authorized to charge Deposit Account No. 02-1818 for any fees associated with the instant filing.

Respectfully submitted,

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Dated: 2 May, 2006

(CCPA 1970), as precedent to the contrary since that case concerned a correctly filed reissue application and the subsequent addition of broadened claims. The court simply held that the language "applied for" in the fourth paragraph of 35 U.S.C. § 251 refers to filing of an application for reissue and did not prohibit the addition of broadened claims to the correctly filed application.

The decision of the PTO should be affirmed.



In re John A. DONOHUE.

Serial No. 263900.

Appeal No. 85-868.

United States Court of Appeals,
Federal Circuit.

July 3, 1985.

Applicant appealed from a decision of the United States Patent and Trade Mark Office Board of Appeals which sustained final rejection of certain claims of an invention relating to acid compounds which were suitable for producing polymers used to form shaped objects such as film, fibers or molded parts. The Court of Appeals, Jack R. Miller, Senior Circuit Judge, held that the claims were properly rejected as anticipated.

Affirmed.

1. Patents ☞16(2, 3)

Prior art under 35 U.S.C.A. § 102(b) must sufficiently describe the claimed invention to have placed the public in possession of it; such possession is effected if one of ordinary skill in the art could have combined publication's description of the invention with his own knowledge to make the claimed invention.

2. Patents ☞69

Even if claimed invention is disclosed in a printed publication, that disclosure will not suffice as prior art if it was not enabling; however, it is not necessary that an invention disclosed in a publication actually be made in order to satisfy the enablement requirement. 35 U.S.C.A. § 102(b).

3. Courts ☞96(1)

Court of Appeals is bound by decisions of the Court of Customs and Patent Appeals.

4. Patents ☞72(1)

Anticipation rejection requires a showing that each limitation of a claim must be found in a single reference, practice, or device.

5. Patents ☞72(1)

Claims of an invention relating to acid compounds which were suitable for producing polymers used to form shaped objects, such as film, fibers or molded parts, were properly rejected under 35 U.S.C.A. § 102(b) as anticipated.

William Magidson, of Chicago, Ill., argued for appellant.

Harris A. Pitlick, Associate Solicitor, U.S. Patent & Trademark Office, of Arlington, Va., argued for appellee. With him on the brief were Joseph F. Nakamura, Solicitor and John W. Dewhirst, Associate Solicitor, Washington, D.C.

Before MARKEY, Chief Judge, BALDWIN, Circuit Judge, and MILLER,* Senior Circuit Judge.

JACK R. MILLER, Senior Circuit Judge.

This is an appeal from the decision of the U.S. Patent and Trademark Office ("PTO") Board of Appeals ("board") sustaining the

* Judge Miller assumed senior status effective

June 6, 1985.

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final rejection of appellant's claims.¹ 1, 2, 5, 6, 7, 25; and 28. We affirm.

BACKGROUND

The subject matter of this appeal was previously before this court's predecessor in *In re Donohue*, 632 F.2d 123, 207 USPQ 196 (CCPA 1980) ("*Donohue I*").² There is no need to discuss the details of that opinion; however, a summary of the pertinent facts is appropriate for a full understanding of the issues before us.

The present invention relates to 2,2',6,6'-tetramethylbiphenyl-4,4'-dicarboxylic acid compounds which are suitable for producing polymers used to form shaped objects, such as film, fibers, or molded parts. Claim 1, which is the sole independent claim on appeal, is illustrative:

2,2',6,6'-tetramethylbiphenyl-4,4'-dicarboxylic acid compound comprising said acid, an acyl halide derivative thereof, or a simple ester thereof.

The PTO has rejected all the appealed claims under 35 U.S.C. § 102(b) "as anticipated by Nomura [et al.], optionally in view of Lincoln and Walker [et al.]".

Nomura et al. ("Nomura")³ discloses twelve 2,2',6,6'-tetramethylbiphenyls ("TMBP") which are 4,4'-disubstituted with NH₂, NMe₂, OH, OMe, Cl, Br, I, CO₂H, CO₂Me, CN, NO₂, or H substituents. Methods of preparing all these compounds, except those disubstituted with CO₂H or CO₂Me, are set forth in Nomura. Nomura's disclosure of how to make 4,4'-dinitrile (or dicyano) TMBP is particularly signifi-

1. In application Serial No. 263,900, filed May 15, 1981, for Tetramethylbiphenylcarboxylic Acids and Derivatives Thereof, which is a division of Serial No. 60,909, filed July 26, 1979, and a continuation of Serial No. 622,649, filed October 15, 1975, which is a continuation-in-part of Serial No. 517,506, filed October 24, 1974.
2. *Donohue I* involved application No. 622,649. See note 1, *supra*.
3. Yujiro Nomura and Yoshito Takeuchi, "Substitution Effects in Aromatic Proton Nuclear Magnetic Resonance Spectra. Part VI. [²H₆] Benzene-induced Solvent Shifts in 4,4'-Disubstituted 2,2',6,6'-Tetramethylbiphenyls and Related Compounds," *J. Chem. Soc'y (B)*, 956-60 (1970).
4. U.S. Patent No. 3,876,691, issued April 8, 1975, on application No. 351,696, filed April 16, 1973, for a "Process for the Hydrolysis of Nitriles."
5. Wagner et al., *Synthetic Organic Chemistry* 412-15 (John Wiley & Sons, N.Y., N.Y.) (1965).
6. Claim 1 in *Donohue I* differs from claim 1 of the present appeal only in that the latter includes the limitation "comprising said acid, an acyl halide derivative thereof, or a simple ester thereof." Claims 5, 6, and 7 of *Donohue I* specify the same dependent features as in the presently-appealed claims of the same number.

cant, because Lincoln⁴ and Wagner et al. ("Wagner")⁵ teach, generally, the preparation of carboxylic acids from nitriles by hydrolysis.

In *Donohue I*, a majority of the Court of Customs and Patent Appeals ("CCPA") affirmed the PTO's rejection of appealed claims 1, 5, 6, and 7⁶ under 35 U.S.C. § 102(b). *Id.* at 127, 207 USPQ at 200. The basis for the rejection was, as it is here, Nomura with reference to Lincoln and Wagner. *Id.* at 126, 207 USPQ at 199.

A minority of the CCPA voted to reverse the PTO's decision, because they concluded it was uncertain from the text of Nomura that the dicarboxylic acid TMBP and dimethyl ester TMBP were ever prepared. *Id.* at 129, 207 USPQ at 201. Accordingly, Nomura's disclosure was, in the minority's view, no more than a mere naming of the claimed compounds which is insufficient to constitute an enabling disclosure. *Id.* at 129, 207 USPQ at 201.

After *Donohue I*, the presently-appealed application was filed. During prosecution before the PTO, appellant submitted an affidavit under 37 C.F.R. § 1.132 executed by Dr. Ellis K. Fields ("Fields affidavit"). In this affidavit, Dr. Fields states that he wrote to Dr. Yoshito Takeuchi, one of the authors of Nomura, to ask whether the disclosed dicarboxylic acid TMBP or dimethyl ester TMBP compounds were ever synthesized, as indicated in Nomura. Dr. Takeuchi responded by stating that these compounds were not synthesized, and Dr.

4. U.S. Patent No. 3,876,691, issued April 8, 1975, on application No. 351,696, filed April 16, 1973, for a "Process for the Hydrolysis of Nitriles."
5. Wagner et al., *Synthetic Organic Chemistry* 412-15 (John Wiley & Sons, N.Y., N.Y.) (1965).
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Fields submitted his affidavit to that effect.

Despite the Fields affidavit, the examiner finally rejected the claims, and an appeal to the board was filed. The board affirmed the rejection of the claims on the grounds stated *supra*, holding that it was bound by *Donohue I*. As to the Fields affidavit, the board held that whether the authors of Nomura actually prepared the claimed compounds is not "material or relevant"; rather, the key factor in evaluating the adequacy of a reference's disclosure was deemed to be whether that disclosure would have been enabling, and the board determined that the CCPA had decided that question with respect to Nomura.

ANALYSIS

Appellant has made a record different from that in *Donohue I* by submitting the Fields affidavit. This new record presents a new issue of patentability with respect to whether the previously-sustained anticipation rejection can still be maintained. In view of this new issue, the PTO properly declined to make a formal *res judicata* rejection and addressed the question of whether the Fields affidavit overcomes the rejection of the claims based on Nomura. See *In re Ackermann*, 444 F.2d 1172, 1176, 170 USPQ 340, 343 (CCPA 1971); *In re Russell*, 439 F.2d 1228, 1230, 169 USPQ 426, 428 (CCPA 1971); *In re Herr*, 377 F.2d 610, 611, 153 USPQ 548, 549 (CCPA 1967).

Appellant argues that the Fields affidavit, which states that the authors of Nomura did not make the disclosed dicarboxylic acid TMBP and dimethyl ester TMBP compounds, overcomes the PTO's rejection. It is urged that *Donohue I* and *In re Samour*, 571 F.2d 559, 197 USPQ 1 (CCPA 1978), require, *inter alia*, that a 35 U.S.C. § 102(b) rejection based on a primary reference disclosing a claimed compound in conjunction with one or more references which teach how to make that compound, should be sustained only if the claimed compound was actually made. We disagree.

7. This rule is based on the "described in a printed publication" language in 35 U.S.C. § 102(b).

[1, 2] It is well settled that prior art under 35 U.S.C. § 102(v) must sufficiently describe the claimed invention to have placed the public in possession of it.⁷ *In re Sasse*, 629 F.2d 675, 681, 207 USPQ 107, 111 (CCPA 1980); *In re Samour*, 571 F.2d at 562, 197 USPQ at 4; see also *Reading & Bates Construction Co. v. Baker Energy Resources Corp.*, 748 F.2d 645, 651-52, 223 USPQ 1168, 1173 (Fed.Cir.1984). Such possession is effected if one of ordinary skill in the art could have combined the publication's description of the invention with his own knowledge to make the claimed invention. See *In re LeGrice*, 301 F.2d at 939, 133 USPQ at 373-74. Accordingly, even if the claimed invention is disclosed in a printed publication, that disclosure will not suffice as prior art if it was not enabling. *In re Borst*, 345 F.2d 851, 855, 145 USPQ 554, 557 (CCPA 1965), cert. denied, 382 U.S. 973, 86 S.Ct. 537, 15 L.Ed.2d 465 (1966). It is not, however, necessary that an invention disclosed in a publication shall have actually been made in order to satisfy the enablement requirement.

In re Wiggins, 488 F.2d 538, 179 USPQ 421 (CCPA 1973) and *In re Sheppard*, 339 F.2d 238, 144 USPQ 42 (CCPA 1964), do not support a contrary view. In those cases, the references were deemed insufficient, because they stated that attempts to prepare the claimed compounds were unsuccessful. Such failures by those skilled in the art (having possession of the information disclosed by the publication) are strong evidence that the disclosure of the publication was nonenabling. By contrast, the fact that the author of a publication did not attempt to make his disclosed invention does not indicate one way or the other whether the publication would have been enabling.

Although *In re Samour* and *Donohue I* mention that the claimed invention in each case was apparently produced in conjunction with the anticipatory reference, this is a far cry from proclaiming that such pro-

See *In re LeGrice*, 301 F.2d 929, 936, 133 USPQ 365, 371 (CCPA 1962).

duction is required to meet the enablement requirement. *In re Samour*, in fact, states:

[W]hether or not [the claimed invention] has been made previously is not essential to a determination that a method of preparing it would have been known by, or would have been obvious to, one of ordinary skill in the art.

571 F.2d at 563 n. 6, 197 USPQ at 4 n. 6. Therefore, the statements in *In re Samour* and *Donohue I* that the claimed invention was made previously serve to point out the absence of any strong evidence of nonenablement as in *Wiggins and Sheppard*. See *In re Donohue*, 632 F.2d at 126 n. 6, 207 USPQ at 199 n. 6.

[3] At oral argument, appellant also challenged the correctness of the CCPA's holding in *In re Samour* and *Donohue I* that several references can be used together to support an anticipation rejection. However, we are bound by the CCPA's decision in those cases. *South Corp. v. United States*, 690 F.2d 1368, 1370-71, 215 USPQ 657, 658 (Fed.Cir.1982) (in banc). At the same time, we have no difficulty with the rejections made in *In re Samour* and *Donohue I*.

[4, 5] It is elementary that an anticipation rejection requires a showing that each limitation of a claim must be found in a single reference, practice, or device. E.g., *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed.Cir. 1983), cert. denied, — U.S. —, 104 S.Ct. 1284, 79 L.Ed.2d 687 (1984). The anticipation rejection used here, as in *In re Samour* and *Donohue I*, is not inconsistent with this rule. See *In re Marshall*, 578

8. Compare *Studiengesellschaft Kohle, M.B.H. v. Dart Industries, Inc.*, 726 F.2d 724, 220 USPQ 841 (Fed.Cir.1984) (recognized exception occasionally permitting use of additional references in anticipation rejections but holding exception did not apply).

F.2d 301, 304, 198 USPQ 344, 346 (CCPA 1978). The additional references utilized in this case (viz., Lincoln and Wagner) are not relied upon for suggestion or motivation to combine teachings to meet the claim limitations, as in rejections under 35 U.S.C. § 103. *In re Samour*, 571 F.2d at 563, 197 USPQ at 4-5. Such reliance would be pointless, because Nomura alone discloses every element claimed. The purpose of citing Lincoln and Wagner is, instead, to show that the claimed subject matter, as disclosed in Nomura, was in the public's possession. *Id.* Therefore, the anticipation rejection based on Nomura, Lincoln, and Wagner is proper.⁸

Appellant also argues that the references fail to teach the solubility characteristics and melting point range set forth in dependent claims 25 and 28, respectively.⁹ However, where, as here, the dicarboxylic acid TMBP and dimethyl ester TMBP of Nomura are identical to the claimed invention, the properties of Nomura's compounds are inherently the same as those of the claimed invention in the absence of proof to the contrary. See *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977).

In view of the foregoing, the board's decision is affirmed.

AFFIRMED



9. Claims 25 and 28 read as follows:

25. The acid of Claim 2, said acid being soluble in ether and N-methyl-2-pyrrolidone.
28. The dimethyl ester of Claim 7, having a melting point of 128-129°C.

Cite as 301 F.2d 929 (1962)

are to some extent sold to the same classes of purchasers or advertised in the same publications"—a finding not questioned by the majority. Both the Board and the majority agree that the applicant's broad designation of the goods as power supplies "comprehends static and transistorized power equipment of the character sold by opposer." In other words, regardless of the precise types of equipment now being sold, if registration is allowed, the trademarks may be used in connection with identical goods.

We are not here concerned with the law of unfair competition nor with the right of the applicant to the use of its corporate name, nor with its good faith in adopting it as a trademark. The issue is confusing similarity of the marks and nothing else. It is true that precedents are not very helpful in determining that issue. Even so, I do not see how the court can be applying consistent standards as to likelihood of confusion when it decides that "Dyanshine" and "Dishine" (Barton Mfg. Co. v. Hercules Powder Co., *supra*) are confusingly similar and also that "Winco" and "Wiancko" are not.

This court, in a recent case in which it was held that "Huvilon" so resembled "Uvinul" as to be confusingly similar, pointed out that "The fact that neither name has any meaning apart from the goods on which they are used makes it difficult for a purchaser to keep the names clear of possible confusion based on * * similarities." *General Aniline & Film Corp. v. Hukill Chemical Corp., Cust. & Pat.App.*, 287 F.2d 926, 927. In the present case we have two perfectly meaningless words, both of them unusual and neither remotely suggestive of any English word. In the case of ordinary well known English words, most literate people know how the word should be spelled and, therefore, quickly notice a very slight variance. Not so with words like those before us or like "Huvilon" and "Uvinul". It seems to me that the soundness of the court's observation in the "Huvilon" case quoted above is demonstrated by the fact that in a period of seven months the let-

ters received by the applicant showed over 100 different variations or misspellings of its name although the writers had the correct address and thus appeared to be acquainted with the applicant.

I would reverse the decision of the Board.



49 CCPA

Application of Edward Burton LeGRICE.**Patent Appeals Nos. 6727, 6728.**United States Court of Customs
and Patent Appeals.

May 4, 1962.

Rehearing Denied July 11, 1962.

Proceeding on applications for patents for rosa floribunda plants. The Board of Appeals of the United States Patent Office affirmed final rejection of applications Nos. 709,127 and 709,128, and the applicant appealed. The Court of Customs and Patent Appeals, Smith, J., held that descriptions in foreign publications were not enabling descriptions which could constitute bar to patentability of applications.

Reversed.

1. Patents ☐=70

Congress, by enacting no exception with respect to patents for plants, to statute making unpatentable inventions described in printed publications more than one year prior to date of application for patent intended that it be interpreted the same for plant patents as it had been interpreted in relation to patents for other inventions. 35 U.S.C.A. §§ 102 (b), 161.

2. Patents ☐=69

Patented inventions cannot be superseded by mere introduction of foreign publication of kind, though of prior date, unless description and drawings contain

and exhibit substantial representation of patented improvement, in such full, clear, and exact terms as to enable any persons skilled in the art or science to which it appertains to make, construct, and practice invention to same practical extent as they would be enabled to do if mere information was derived from prior patent. 35 U.S.C.A. §§ 102(b), 161.

3. Patents ~~69~~

Before any publication can amount to statutory bar to grant of patent, its disclosure must be such that skilled artisan could take its teachings in combination with his own knowledge of particular art and possess invention. 35 U.S.C.A. §§ 102(b), 161.

4. Patents ~~69~~

Descriptions in printed publications of new plant variety, to bar patent thereon, must meet requirements of enabling descriptions which in fact place invention in possession of public. 35 U.S.C.A. § 102(b).

5. Patents ~~69~~

Descriptions in foreign publications were not enabling descriptions which could constitute bar to patentability of applications for patents for rosa floribunda plants.

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(Spencer B. Michael, Smith, Michael & Gardiner, Washington, D. C., of counsel), for appellant.

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(Joseph Schimmel, Washington, D. C., of counsel), for the Commission of Patents.

* United States Senior District Judge for the Eastern District of Pennsylvania, designated to participate in place of Judge O'Connell, pursuant to provisions of Section 294(d), Title 28, United States Code.

I. Sec. 161. Patents for plants

Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated

Before WORLEY, Chief Judge, and RICH, MARTIN, and SMITH, Judges, and Judge WILLIAM H. KIRKPATRICK.*

SMITH, Judge.

The issue on these consolidated appeals is whether appellant is entitled under 35 U.S.C. 161¹ to a patent on each of his applications serial numbers 709,127 and 709,128, filed January 15, 1958, each entitled "Rosa Floribunda Plant." The Patent Office Board of Appeals affirmed the final rejection of both applications under 35 U.S.C. § 102(b) on the ground that the inventions had been described in printed publications in England more than one year prior to the dates of filing of the said applications. The publications occur in the National Rose Society Annual of England and in catalogues. The Annual describes appellant as having raised the roses described and the catalogues show color pictures of these roses. There is no dispute that the publications relate to and picture the identical roses which were originated by appellant and which he now seeks to patent.

Resolution of the issue on these appeals requires us to determine whether as a matter of law, the English publications constitute, within the meaning of 35 U.S.C. § 102(b), a bar to appellant's right to patents on said applications.

The applicable portion of 35 U.S.C. § 102(b) reads:

"A person shall be entitled to a patent unless— * * * (b) the invention was * * * described in a printed publication * * * more than one year prior to the date of the application for patent in the United States, * * *."²

state, may obtain a patent therefor, subject to the conditions and requirements of this title.

The provisions of this title relating to patents for inventions shall apply to patents for plants, except as otherwise provided. (July 19, 1952, ch. 950, 66 Stat. 804; Sept. 3, 1954, c. 1259, 68 Stat. 1190.)

2. This section is derived from 35 U.S.C. (1946 ed.) 31, R.S. 4886, Act of Mar. 3, 1897, c. 391, which was derived from Act

Cite as 301 F.2d 929 (1962)

Thus, the statute expressly prohibits the granting of a patent on an invention or discovery which has been "described in a printed publication * * * more than one year prior to the date of the application for patent in the United States." Long prior to the inclusion of this provision in 35 U.S.C. § 102(b), the courts had construed earlier provisions and had interpreted them with regard to what must be described in a printed publication in order for the publication to be a bar to the grant of a patent. The underlying concept on which the courts permitted such a bar is that the description of the invention in the printed publication was sufficient to give possession of the invention to the public.

The express provision of 35 U.S.C. § 161 permits the granting of patents on the particular classes of plants therein enunciated which include "Rosa Floribunda Plants" disclosed in the applications on appeal. Grant of such a patent is, however, "subject to the conditions and requirements" of Title 35 "except as otherwise provided." Thus, appellant's right to patents on his applications is subject to the bar stated in 35 U.S.C. § 102(b), if the publications in issue meet the legal requirements necessary to establish such a bar.

The particular question of law to be here decided is presented on stipulated facts which, insofar as they relate to the issue, are here quoted from the record:

"4. Each application was accompanied by the conventional formal oath containing the statement that the applicant did not believe the variety of plant was described in any printed publication in any country more than one year prior to his application, but adding the following additional recitations:

"(a) In Serial No. 709,127,— [Charming Maid] 'that certain information relative to the new variety was published in the National Rose

of July 8, 1870, c. 230, sec. 24, 16 Stat. 201. The Act of 1836, c. 357, 5 Stat. 117, sec. 7, referred to "printed publications,"

Society Annual, of England, for 1954 on pages 156 and 157 and like information was published more than one year prior to the date hereof in catalogues, but he believes that such information cannot enable anyone to practice the invention by producing the present variety.'; and

"(b) In Serial No. 709,128,— [Dusky Maiden] 'that certain information relative to a new variety was published in the National Rose Society Annual, of England, in 1949 on page 155, and like information was published more than one year prior to the date hereof in catalogues, but he believes that such information cannot enable anyone to practice the invention by producing the variety'.

"5. (a) The disclosures in the Rose Annual of 1949, page 155, insofar as pertinent, is [sic] as follows:

"The Gold Medal Award was made to:—(Here follows the list of roses, including Dusky Maiden)—

"—Dusky Maiden (Hy. Poly.) raised and exhibited by E. B. LeGrice, North Walsham.—Glowing dark scarlet with dusky velvety sheen. Single blooms carried in large trusses. Size when open 3-in. in diameter. Very fragrant. Vigorous. Foliage dark green and abundant. Bedding. Trial Ground Certificate, 1945. Prune 34.'

"(b) The disclosure in the Rose Annual of 1954, pages 156 and 157, is as follows:

"The Trial Ground

"List of Trial Ground Awards, 1953

"(To which is appended the Show Awards in 1953.)

"(Here follows a list of roses, including Charming Maid)—

"—Charming Maid (Flor.). Trial Ground No. 624. Reg. No. 269. Dainty Maiden x Mrs. Sam McGredy.

while the Act of 1793, c. 11, 1 Stat. 318, sec. 6, referred to being "described in some public work."

Raiser and Distributor E. B. Le Grice, North Walsham. Vigorous growing variety with deep glossy green foliage 16. Freedom from disease 16. Large single flowers borne in small clusters. Colour pink shaded gold 16. Freedom of flowering 16. General effect 6. Fragrance 5. Gold Medal Provincial Show, 1953.'

"6. In each case, the prior catalogue publication referred to in the oath includes a color picture of the rose clear enough to establish identity in appearance between the rose illustrated and the applicant's variety, and the catalogue publication with the picture establishes that the rose described and illustrated is the variety described and claimed in the application, and the rose so described and illustrated is, in fact, the variety so described and claimed in the application."

The unique aspects of plants which are the subject of plant patents have posed numerous problems to various tribunals charged with the application of basic patent law concepts thereto. A review of all the reported decisions dealing with plant patents³ establishes that the present case presents a legal problem of first impression on which there are no controlling precedents.

35 U.S.C. § 161 is based on an amendment, effective May 23, 1930, to R.S. 4886, (Sec. 31 of former title 35 U.S.C.), which originated in House Bill 11372 of the Second Session of the 71st Congress. The Committee on Patents which reported the bill filed a report stating:

"The purpose of the bill is to afford agriculture, so far as practicable, the

3. Sugar Cane—Bourne v. Jones, D.C., 114 F.Supp. 413.
Dream Navel Orange—Nicholson v. Bailey, D.C., 182 F.Supp. 509.
Nectarine—Kim Bros. v. Hagler, D.C., 167 F.Supp. 665.
Roses—Armstrong Nurseries, Inc. v. Smith et al.; Same v. Hood et al.; The Conard-Pyle Company v. Smith et al.; Jackson & Perkins Company v. Smith et al.; Same v. Hood et al., D.C., 170 F. Supp. 519.

same opportunity to participate in the benefits of the patent system as has been given industry, and thus assist in placing agriculture on a basis of economic equality with industry. The bill will remove the existing discrimination between plant developers and industrial inventors. * * *

The report expresses the hope that the bill "will afford a sound basis for investing capital in plant breeding and consequently stimulate plant development through private funds". It then goes on to state:

"No one has advanced a just and logical reason why reward for service to the public should be extended to the inventor of a mechanical toy and denied to the genius whose patience, foresight, and effort have given a valuable new variety of fruit or other plant to mankind.

"This bill is intended not only to correct such discrimination, but in doing so it is hoped the genius of young agriculturists of America will be enlisted in a profitable work of invention and discovery of new plants that will revolutionize agriculture as inventions in steam, electricity, and chemistry have revolutionized those fields and advanced our civilization."

An identical report was filed by the Senate Committee on Patents.

The unique nature of a plant patent was recognized by the Patent Office Board of Interference Examiners in Dunn v. Ragin v. Carlile, 50 USPQ 472 (1941) where at p. 474 it was recognized "The mere filing of an application for a patent

Upright Barberry—Cole Nursery Co. v. Youdath Perennial Gardens, Inc. et al., D.C., 17 F.Supp. 159.

Bacteria—In re Arzberger, 112 F.2d 834, 27 CCPA 1315.

Pineapple Orange—Dunn v. Ragin v. Carlile, 50 USPQ 472.

Syngonium Plant—Ex Parte Foster, 90 USPQ 16.

Peach Tree—Ex Parte Moore, 115 USPQ 145.

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for a new variety of plant would not enable anyone to reproduce such a plant."

35 U.S.C. § 161 engrafts the Plant Patent Act onto the basic patent law, which requires us to apply thereto all the rules, regulations and provisions of the basic patent law except that, by the express provision of 35 U.S.C. § 162, a plant patent cannot be declared invalid if its description "is as complete as is reasonably possible."

As indicated by the Committee reports and as provided in the statutory provisions, the law of plant patents is so inextricably bound up with the earlier general patent law that the former cannot be understood without consideration of the latter, and as provided in 35 U.S.C. § 161, the provisions of Title 35 "relating to patents for inventions shall apply to patents for plants, except as otherwise provided."

It appears, therefore, to have been the intent of Congress that plant patents and patents for other inventions should be subject to the same statutory provisions "except as otherwise provided."

[1] Thus in determining the meaning of 35 U.S.C. § 102(b) as it applies to patents for plants, the first consideration is that Congress did not provide any exception thereto, so it should be presumed that Congress intended that it should be applied to patents for plants as it had been previously applied to patents for other inventions. In other words, we think Congress, by enacting no exception to 35 U.S.C. § 102(b) with respect to patents for plants, intended that it be interpreted the same for plant patents as it has been interpreted in relation to patents for other inventions. Otherwise a "discrimination" would continue to exist "between plant developers and industrial inventors," which, as indicated in the Committee Reports, Congress intended to eliminate by passage of the Plant Patent provisions.

Since there has been no interpretation of 35 U.S.C. § 102(b) as applied to plant patents, we turn to the prior decisions dealing with its application to patents

on other inventions. In these decisions, we find 35 U.S.C. § 102(b) and its predecessor statutes have been interpreted as requiring that the description of the invention in the publication "must be sufficient to put the public in possession of the invention." Curtis on Patents, 3rd ed., Sec. 378; Seymour v. Osborne, 11 Wall. 516, 555, 20 L.Ed. 33.

Robinson on Patents, Sec. 325, entitled "Prior Publication: its Essential Requisites," summarizes the long recognized requirements of a "Prior Publication" as follows:

"The second method recognized by law, in which an earlier invention may be made accessible to the public is by Prior Publication. To have this effect the publication must be: (1) A work of public character, intended for general use; (2) Within reach of the public; (3) Published before the date of the later invention; (4) A description of the same complete and operative art or instrument; and (5) So precise and so particular that any person skilled in the art to which the invention belongs can construct and operate it without experiments and without further exercise of inventive skill. Unless a publication possesses all these characteristics it does not place the invention in the possession of the public, nor defeat the claim of its inventor to a patent."

It is Robinson's 5th characteristic of a prior publication with which we are here concerned. This characteristic is further elaborated in Sec. 330 of Robinson on Patents entitled "Prior Publication: Publication Must Fully Communicate the Invention to the public," which states the rule as follows:

"Finally, the description must place the invention in the possession of the public as fully as if the art or instrument itself had been practically and publicly employed. In order to accomplish this, it must be so particular and definite that *from it alone, without experiment or the exertion of his own inventive skill,*

any person versed in the art to which it appertains could construct and use it." [Emphasis ours.]

Walker on Patents, Deller Edition at p. 271, states:

"And a claim for an article of manufacture may be anticipated by a prior patent or printed publication, which describes the article, without describing any process of making it; provided a knowledge of the article would teach a skillful mechanic some process of making it." [Emphasis ours.]

The underlying public purpose of the patent law, recognized by Congress in enacting the plant patent provisions, is to add to the public store of useful knowledge. This concept is more fully stated in Sec. 36, Robinson on Patents, as follows:

"To stimulate inventive skill and energy is one of the most effective methods of advancing national prosperity, and in modern times especially attracts the attention of all enlightened governments. While it is certain that the human mind, independently of external impulses, is constantly engaged in pushing its investigations into new fields and in achieving new results, it by no means follows that practical inventions in the industrial arts would rapidly be multiplied without the inducement offered by the prospect of pecuniary reward. Such inventions necessitate not only the conception of a new idea by the mind, but the reduction of that idea to practice in some tangible and useful form. This latter process cannot be accomplished by speculation only, but involves experiments, often protracted and expensive, and a degree of physical skill and labor which otherwise applied might secure to the inventor a considerable recompense in money. To lead an able and prudent man to engage in such enterprises as these, some reasonable hope of profiting by his own labors must be aroused with-

in him; and this can be effected only by a promise on the part of the public that if he succeeds in his invention he shall be suitably rewarded. Experience teaches that this is true; the progress of inventive triumphs, in all civilized nations, being directly in proportion to the encouragement offered to inventors by the state."

As pointed out in the Committee Reports, supra, prior to passage of the plant patent provisions, plant breeding and research was dependent, in large part, upon Government funds to Government experiment stations, or to the limited efforts of the amateur breeder. The Committee Report expresses the hope that the bill "will afford a sound basis for investing capital in plant breeding and consequently stimulate plant development through private funds." The Committee Report then continues:

"In addition, the breeder to-day must make excessive charges for specimens of the new variety disposed of by him at the start in order to avail himself of his only opportunity for financial reimbursement. Under the bill the breeder may give the public immediate advantage of the new varieties at a low price with the knowledge that the success of the variety will enable him to recompense himself through wide public distribution by him during the life of the patent. The farmers and general public that buy plants will be able promptly to obtain new improved plants at a more moderate cost."

The way in which a plant patent advances the public purpose and achieves the result which Congress appears to have intended is stated in Appellant's brief as follows:

"A plant patent performs its function by making it profitable to the developer to make as wide a distribution as possible of the res, the plant itself. If the variety is deserving, hundreds of specimens are likely to

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be widely distributed, thereby reducing the danger of their perishing in a common disaster. The likelihood of extinction of the res before an improved variety or worthy successor is developed is thus rendered remote. Publicity informs the public where specimens exist. This is how a plant patent adds to the store of *useful knowledge.*"

Before passing to an analysis of the case law with respect to the meaning of "described in a printed publication," as this term is used in 35 U.S.C. § 102(b), it must be borne in mind that there are inherent differences between plants and manufactured articles. Should a plant variety become extinct one cannot deliberately produce a duplicate even though its ancestry and the techniques of cross-pollination be known. Manufactured articles, processes, and chemical compositions when disclosed are, however, susceptible to man-made duplication.

Appellant in his brief points out:

"The description of a plant in a plant patent or in a printed publication at best can only recite, as historical facts, that at one time a certain plant existed, was discovered in a certain manner, and was asexually reproduced. This information may be interesting history, but cannot enable others to reproduce the plant. * * * Prior public use and sale of a plant are the avenues by which a plant enters the public domain."

In the case of manufactured articles, processes and chemical compositions, a different situation prevails. Written descriptions and drawings in publications can often enable others to manufacture the article, practice the process or produce the chemical composition. Thus, with respect to publications in these fields, there is a valid basis in public policy for 35 U.S.C. § 102(b) which bars the granting of patents on inventions "described in a printed publication in this or a foreign country * * * more than one year prior to the date of the application for patent in the United States."

The knowledge thus made available to the public must, if it is to anticipate an invention, be practical and complete. As stated in Sec. 227 of Robinson on Patents:

"It is to be remembered, however, that 'knowledge,' in this sense, means such an acquaintance with the invention, on the part of the public, as renders it available to them as a practically operative means. If their knowledge is derived from use in this country, the use must be of such a kind as imparts this information. If it rests on any foreign or domestic patent or publication these must be sufficient to accomplish the same result. In neither of these cases must there be any necessity for the exercise of additional inventive skill, since with the employment of the creative faculties, in the adaptation of any invention to the public use, another obligation is incurred which can only be discharged by protecting that inventor in the exclusive use of the invention. Thus we arrive at a more perfect and exhaustive definition of this attribute of novelty, and see that an invention is to be regarded as new whenever it has not already been brought within the practical knowledge of the public as an operative means, either through prior use at home, or through a prior patent or a prior publication."

In view of the foregoing considerations, it would appear that if section 102 (b) was to be given a different interpretation as to plant patents, it should have been expressly qualified by Congress so that descriptions of plants in printed publications would have been judged by different standards than those so long recognized by leading text writers and the courts. Since no such qualification exists we must, under 35 U.S.C. § 161, apply to the descriptions in the instant publications the same requirements as have been applied to the descriptions in publications in cases dealing with patents on other inventions.

Basically, section 102(b) requires that an inventor, who has placed his invention in the public domain, file his application within one year thereafter or within a year of the time when anyone else may have made it available to the public. Section 102(b) is a recognition that early publication of inventions is to be encouraged and thus does not bar the granting of a patent if the application therefore be filed within one year from the date of the printed publication.

The public purpose of section 102(b) is clear enough, and has been enunciated or assumed in the very considerable body of decisional law in which the clause "described in a printed publication" has been interpreted with respect to whether the publication has in fact conveyed such knowledge of an invention to the public as to put the public in possession of the invention.

[2] The briefs of the parties in the instant case support their opposed conclusions by reference to the ample case law, which sets forth particular standards as to what constitutes a "publication." We think the controlling view here is that stated in *Seymour v. Osborne*, 11 Wall. 516, at page 555, 78 U.S. 516, at page 555, 20 L.Ed. 33 (1870), where the court said:

"Patented inventions cannot be superseded by the mere introduction of a foreign publication of the kind, though of prior date, unless the description and drawings contain and exhibit a substantial representation of the patented improvement, in such full, clear, and exact terms as to enable any person skilled in the art or science to which it appertains, to make, construct, and practice the invention to the same practical extent as they would be enabled to do if the information was derived from a prior patent. Mere vague and general representations will not support such a defence, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation

of the invention, and to carry it into practical use. Whatever may be the particular circumstances under which the publication takes place, the account published, to be of any effect to support such a defence, must be an account of a complete and operative invention capable of being put into practical operation."

See also, *Wisconsin Alumni Research Foundation v. George A. Breon and Company, Inc.*, C.C.A. 8, 85 F.2d 166, cert. denied 299 U.S. 598, 57 S.Ct. 191, 81 L.Ed. 441 (1936), *Downton v. Yeager Milling Co.*, 108 U.S. 466, 3 S.Ct. 10, 27 L.Ed. 789; *Eames v. Andrews*, 122 U.S. 40, 66, 7 S.Ct. 1073, 30 L.Ed. 1064.

[3] We think it is sound law, consistent with the public policy underlying our patent law, that before any publication can amount to a statutory bar to the grant of a patent, its disclosure must be such that a skilled artisan could take its teachings in *combination with his own knowledge of the particular art and be in possession of the invention*. Such a doctrine is in accord with that expressed by the Supreme Court when it held patent No. 137,893 invalid in *Cohn v. United States Corset Co.*, 93 U.S. 366, 23 L.Ed. 907. The court stated (p. 377):

"* * * the evidence shows that the Johnson specification, *in connection with the known state of the art at the time when it was filed and published*, was sufficient to enable one skilled in the art of corset-making and in the use of the jacquard to make the patented corset." [Emphasis ours.]

It is the position of appellant that the publications relied upon by the examiner and the Board of Appeals in rejecting his applications, are not "enabling" publications, i. e., the published information therein is not sufficient to enable anyone of ordinary skill in the art of plant breeding to practice the invention and produce the disclosed varieties of *rosa floribunda* plants. The validity of appellant's position can be appraised only after one understands the general techniques by

which a rose breeder produces a new rose variety.

Commercial rose-breeders, particularly in this country and England, continually strive to develop new varieties with characteristics of interest to commercial and amateur rose growers. A few of these characteristics are color, fragrance, freedom from various diseases, abundant foliage, firmness, size and shape of flower, number and frequency of blooms, etc. Each of these characteristics is a sex-linked characteristic and as such is subject to the applicable principles of plant heredity and the transmission of inheritable characteristics. The Encyclopedia Britannica (1957), states that the number of hybridized roses introduced commercially each year is over one hundred. Roses have been cultivated for so many centuries and have been hybridized so extensively that it is difficult to refer the cultivated forms to wild prototypes. To facilitate grouping varieties with similar characteristics, a horticultural classification has evolved which is complicated and often inconsistent, since there is considerable overlapping and mergence of classes as the result of intensive interbreeding. A comprehensive list given in J. H. McFarland's Modern Roses IV, 1952, includes some 6,150 names which represents only a small proportion of the roses hybridized and named during the preceding 250 years. Due to the number of variable characteristics, no two varieties, even if from identical parentage, are exactly alike. It has aptly been said by Florence Coates in "The Poetry of Earth" that:

"There is always room for beauty:
memory

A myriad lovely blossoms may enclose

But, whatsoe'er hath been there
still must be

Room for another rose".

After determining the characteristics desired in a new rose, the rose breeder

selects the parent plants for certain of their known characteristics. By the process of cross-pollination a seed is formed in one of the parent plants as the result of the union of each pair of sex cells contributed by the parent plants. Propagation from the resulting seeds is "sexual propagation", which is to be distinguished from "asexual propagation", in that in "sexual propagation" the parent plants each contribute to the formation of the embryo that will develop in the seed and eventually give rise to a plant which differs from either of the parent plants as well as from other plants produced from other seeds resulting from the same cross-pollination. In "asexual propagation," however, the plant is propagated by divisions or cuttings to form clones, each of which is identical to the parent plant and to all other cuttings or clones taken from the parent.⁴

The rose breeder strives to produce by sexual propagation a rose having the desired characteristics, after which this particular rose with the desirable characteristics is further propagated by asexual methods in which all of the characteristics of that one rose plant, and only that plant, are transmitted to the new plants derived by cutting, etc.

The *rosa floribunda* plants described in the two applications on appeal and in the publications were produced by sexual propagation as the result of the chance arrangement of the almost infinite number of variables arising from the particular chromosomes of the parent plants. The parentage of the "Dusky Maiden" rose is not disclosed in the publications. The parentage of the "Charming Maid" rose is given in the Rose Annual of 1954 as "Dainty Maiden x Mrs. Sam McGredy." To those skilled in the art of rose breeding this indicates that the parent "Dainty Maiden" is the seed parent, i. e., that this parent was selected by the breeder to bear and develop the seeds which result from pollination of its emasculated flowers with pollen taken

4. "Fundamentals in Plant Breeding" by Samuel L. Emsweller, Plants and Gardens, Summer, 1959.

from the other parent, "Mrs. Sam McGredy."⁵

The production of seeds by cross-pollination does not assure the plant breeder that he has produced a true new plant variety having the characteristics desired. At this step, the principles of heredity and plant genetics introduce such variables that no two seeds from the parent cross can be expected to produce identical plants.

The functions of the chromosomes and genes in transmitting inheritable properties from parents to offspring in plant breeding are brought into play only when the nuclei from different parent plants fuse together to form, in the seed, the nucleus of the new plant. Differences in composition of the fusing nuclei produce an organism which differs from either parent. These differences may be due, for example, to the presence of a duplicated chromatin granule (gene) in one, which may be represented singly or not at all in the other.⁶

While man can and does assist nature by the cross-pollination of selected parent plants, the actual creation of the new plant, because of the almost infinite number of possible combinations between the genes and chromosomes, is not presently subject to a controlled reproduction by act of man. While those skilled in this art now understand the mechanics of plant reproduction and the general principles of plant heredity, they are not presently able to control the factors which govern the combinations of genes and chromosomes required to produce a new plant having certain predetermined desired properties. The plant breeder must time and again recall the lines of Tenny-

5. Emasculation of the flower is accomplished by first cutting the petals at the base of a rose bud, then cutting the tip of the bud. The remainder of the pollination step is described in "Roses for the Home," U. S. Department of Agriculture, Home and Garden Bulletin No. 25 (issued May 1953, slightly revised March 1958), by S. L. Emsweller, W. D. McClellan, and Floyd F. Smith, at page 23, as follows:

"The emasculated flower is then covered with a paper bag to keep unwanted pollen

son's "Flower in the Crannied Wall," after he has completed cross-pollination of the parent stock and awaits the new offspring:

"Flower in the crannied wall,
I pluck you out of the crannies,
I hold you here, root and all, in my
hand,
Little flower—but if I could un-
derstand
What you are, root and all, and all
in all,
I should know what God and Man
is."

It is not until the rose breeder has germinated the sexually produced rose seeds from the selected parents and raised plants therefrom to blooming size that he can make the final selections of the individual plant or plants which are to be multiplied by asexual reproduction.

The *rosa floribunda* plants here in issue thus appear to be something more than Gertrude Stein may have observed when she wrote in "Sacred Emily" that "a rose is a rose is a rose is a rose".

In holding that the publications here in issue constitute a legal bar to a granting of patents on the *rosa floribunda* plants described in the applications here on appeal, we think the examiner and the Board of Appeals disregarded what we have found to be the legally imposed limitations on the meaning of the clause "described in a printed publication" in section 102(b) in the prior cases in which the courts have interpreted the clause in determining whether a particular description in a publication will constitute a statutory bar to the grant of a patent. We think the board and the examiner

from reaching the stigma. In a day or two the stigma is covered with a sticky substance called stigmatic fluid. It is now receptive. Remove the bag, and place the pollen collected from the desired parent plant on the stigma with a camel's hair brush. The paper bag is replaced, and, if the cross-pollination is successful, a seed pod soon starts to form."

6. See Genetics and Eugenics—W. E. Castle, Harvard University Press, 1932 (4th Edition).

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were incorrect in overlooking these cases and interpreting the clause "described in a printed publication" in section 102(b) according to what the examiner called "its exact and unequivocal meaning." When used in the Patent Act of 1952, this clause had acquired in the context in which it is used in section 102(b) something other than an "exact and unequivocal meaning" as a result of the judicially imposed limitation that this clause requires that the description of the invention in the printed publication must be an "enabling" description. Our study of the prior cases which have imposed this interpretation on the clause indicates that the proper test of a description in a publication as a bar to a patent as the clause is used in section 102(b) requires a determination of whether one skilled in the art to which the invention pertains could take the description of the invention in the printed publication and combine it with his own knowledge of the particular art and from this combination be put in possession of the invention on which a patent is sought. Unless this condition prevails, the description in the printed publication is inadequate as a statutory bar to patentability under section 102(b).

[4] We do not agree with the examiner and the board that this creates an "anomaly" when dealing with plant patents which requires that "plant publications must be totally ignored as printed publications." In view of the long line of cases dealing with other types of inventions antedating 1930, we think Congress, by failing to provide otherwise, intended that the provisions of section 102 (b), as applied to plant patents, should not be interpreted otherwise than they had been with respect to other inventions, i. e., that only an "enabling" publication is effective as a bar to a subsequent

7. While many such studies undoubtedly are in progress, some idea of the possible additions to the knowledge of plant heredity is found in current seed catalog offerings of peanut seeds which by atomic irradiation will produce plants in which the peanuts are produced above the ground. The chemical colchicine also is

patent. We do not agree with the view expressed by the examiner that this necessarily requires that plant publications be "totally ignored." Instead, it requires that the facts of each case be carefully considered to determine whether the description in the printed publication in question *does in fact* place the invention in the possession of the public. Each case must be decided on its own particular facts in determining whether, in fact, the description in the printed publication is adequate to put the public in possession of the invention and thus bar patentability of a plant under the conditions stated in section 102(b). While the present knowledge of plant genetics may mean as a practical matter, that the descriptions in such general publications as are here involved cannot be relied upon as a statutory bar under section 102(b), we must be mindful of the scientific efforts which are daily adding to the store of knowledge in the fields of plant heredity and plant eugenics⁷ which one skilled in this art will be presumed to possess.

The patent law, as shown by the Committee Reports, was extended to plant patents in order to stimulate interest in the breeding and commercial development of new and valuable plant species. To erect technical barriers to the grant of such patents by a strict and literal interpretation of the clause "described in a printed publication" in section 102(b) as was done by the examiner and Board of Appeals, apparently without consideration of the public purpose underlying the plant patent provisions, seems to us will defeat the purpose of the act by creating conditions for barring plant patents which are different from the long recognized conditions for barring patents on other inventions.

The decision of the board cites numerous decisions as support for its affirmance

widely used to modify genetic characteristics of seeds. Current studies to "break the chromosome code" may also add to the knowledge of plant breeders so that they may someday secure possession of a plant invention by a description in a printed publication as is now possible in other fields of inventive effort.

of the examiner's rejection. It is our view that these decisions either have not been properly interpreted by the board in relying on them to support its view or that they are not controlling upon the issue here.

The board relies heavily on *Cohn v. United States Corset Co.*, *supra*, which in the solicitor's brief has been characterized as "the landmark case on this aspect of the law," and is relied upon as support for the assertion that "the overwhelming weight of authority supports the proposition that a clear naked description in a prior publication is sufficient under the law to bar a subsequent inventor from obtaining a patent on the identical thing."⁸ That the Cohn case did not so hold seems clear to us. However, in view of the reliance placed upon language used in that case and upon the number of cases which agree with the position of the solicitor concerning what the Cohn case is alleged to hold, we shall here discuss the Cohn case in some detail.

The Cohn case involved a suit for infringement of the Cohn patent on a corset which contained the following claim:

"A corset having the pockets for the reception of the bones formed in the weaving, and varying in length relatively to each other, as desired, substantially in the manner and for the purpose set forth."

The defense of invalidity of the Cohn patent was predicated, under a statute which corresponds to 35 U.S.C. § 102(a), on an English provisional specification of one John Henry Johnson as a *prior publication* which was asserted to disclose the Cohn invention. The pertinent part of the Johnson disclosure stated:

"This invention related to the manufacture of what are known as woven corsets, and consists in the employment of the jacquards in the loom,

8. In considering this assertion, it should be borne in mind that we are here dealing with an alleged description in a printed publication of applicant's own roses, whereas in the Cohn case, the description in the printed publication was that of an

one of which effects the shape or contour of the corset, and the other the formation of the double portions of slots for the introduction of the whalebones. These slots or double portions are made simultaneously with the single parts of the corset; and, in place of being terminated in a point, they are finished square off, and at *any required length* in the corset, instead of always running the entire length, as is usually the case in woven corsets." [Emphasis ours.]

Referring to the Johnson disclosure, the court stated (p. 370):

"It is, therefore, fatal to the validity of the plaintiff's patent if, in fact, it does *describe sufficiently* the manufacture described and claimed in his specification. It must be admitted that, unless the earlier printed and published description does exhibit the later patented invention in such a full and intelligible manner as *to enable persons skilled in the art to which the invention is related to comprehend it without assistance from the patent*, or to make it, or repeat the process claimed, it is insufficient to invalidate the patent." [Emphasis ours.]

The court further stated (p. 373):

"But the claim must be further limited in view of the state of the art when the application for the patent was made. * * * For more than twenty years it has been customary to weave in these gussets bone-pockets stopped off or closed in the weaving at various distances from the edge of the corset.

* * * * *

"It is manifest, then, that there is nothing in the plaintiff's patent which was not described in the Johnson specification, unless it be that the closed slots or cases mentioned

invention made by a prior inventor, thus in a strict sense, the Cohn case is dealing with a situation covered by 35 U.S.C. § 102(a) rather than the technical bar of 35 U.S.C. § 102(b).

Cite as 301 F.2d 929 (1962)

in the former are required to be woven of varying length. A variation in the length of the pockets relatively to each other, as desired, is, as we have seen, the sole distinctive feature of the plaintiff's invention. *But it was well known before Johnson filed his specification that the bone-pockets of a corset must vary in length.* (93 U.S. at 375) [Emphasis ours.]

* * * * *

"Every person skilled in corset making knew the necessity of such variation. * * *" (93 U.S. at 376)

The crux of the Cohn decision as we see it is:

"* * * the evidence shows that the Johnson specification, *in connection with the known state of the art at the time when it was filed and published, was sufficient to enable one skilled in the art of corset-making and in the use of the jacquard to make the patented corset.*" (93 U.S. at 377.) [Emphasis ours.]

It is in the light of these comments by the court that the true significance of its statements, which the Patent Office and numerous cases quote as to the holding in the Cohn case, can be determined. The court said (p. 377):

"It is quite immaterial, even if it be a fact, that the Johnson specification is sufficient to teach a manufacturer *how to make* the patented corset. It is enough if it sufficiently describes the corset itself. Neither it nor the plaintiff's specification exhibits the process of making. Neither of them set up a claim for a process. The plaintiff claims a manufacture, not a mode of making it; and the important inquiry, therefore, is, whether the prior publication *described* the article. To defeat a party suing for an infringement, it is sufficient to plead and prove that the thing patented to him had been patented or described *in some printed publication* prior to his sup-

posed invention or discovery thereof. * * * It is enough for this case that the invention patented to the plaintiff was *clearly described* in 1854, in the printed publication of the Johnson (Geresme) provisional specification." [Emphasis added.]

The court throughout its opinion in the Cohn case directly referred to those skilled in the art, and the knowledge which they possessed. We think it is because of this knowledge, and only because of this knowledge, that the court said "the important inquiry, therefore, is, whether the prior publication described the article."

The solicitor also cites in support of the board's position, the decision of the District Court of Maryland in One-Piece Bi-focal Lens Co. v. Bisight Co., 246 F. 450, mod. 259 F. 275 (CCA 4), cert. den. 249 U.S. 606, 39 S.Ct. 288, 63 L.Ed. 799. At page 457, of 246 F. the Court stated:

"The description under consideration is one which does not tell how to make the article it describes. It is one published at a time when those skilled in the art would not either from its disclosures or their knowledge, or from both combined, know how to produce it. For the reasons already stated, it is believed that, even under such circumstances, it may anticipate a later patent."

Prior to this statement the District Court discussed the Cohn case and, basing its analysis of that decision upon the language on page 377 last quoted supra, stated on page 456:

"Is the force of this language materially weakened by the fact that the court went on to point out that what was known at the time the anticipating Johnson's specification was filed, was sufficient to enable one skilled in the art to make the corset?"

In view of our analysis of the Cohn case, supra, we answer the District Court's question in the affirmative. The standard for publications applied by the

District Court is somewhat uncertain, since it is stated that the publication "may anticipate a later patent." [Emphasis added.] Whatever may have been its position, we do not agree, as stated supra, with its analysis of the Cohn case.

The case of General Electric Co. v. De Forest Radio Co., 17 F.2d 90 (D.C.Del.), mod. 28 F.2d 641 (CCA 3), cert. den. 278 U.S. 656, 49 S.Ct. 180, 73 L.Ed. 565, is also cited in the solicitor's brief. In the General Electric case, the court stated in essence that a publication which evidences conception of an idea would be enough to "destroy the product claims in suit upon the ground that they are wanting in invention." As its authority, the court cited the Bifocal case, which, as we have previously discussed, based its decision on what we think is an erroneous interpretation of the Cohn case. We therefore decline to accept the statement in the General Electric case as controlling.

The Patent Office also relies upon several additional decisions of this court which are alleged to support its position. Among these cases are: In re Marden and Rentschler, 48 F.2d 428, 18 CCPA 1119; In re Attwood, 253 F.2d 234, 45 CCPA 824; In re Von Bramer et al., 127 F.2d 149, 29 CCPA 1018; In re Crosley et al., 159 F.2d 735, 34 CCPA 882; In re Fink, 62 F.2d 103, 20 CCPA 716; In re Stoll et al., 161 F.2d 241, 34 CCPA 1058; In re Michalek, 162 F.2d 229, 34 CCPA 1124; In re Shackell, 194 F.2d 720, 39 CCPA 847; In re Kebrich, 201 F.2d 951, 40 CCPA 780; In re Inman, 228 F.2d 229, 43 CCPA 709; In re Baranaukas et al., 228 F.2d 413, 43 CCPA 727.

In none of these decisions do we find any support for the position taken by the Patent Office nor anything inconsistent with our position in the instant case.

The Attwood case concerned use, as a reference, of a prior patent which was said by the appellant to cover an inoperative disclosure. The court based its decision on the Marden and Rentschler and Von Bramer cases. The Marden and Rentschler case cited the Cohn case and,

erroneously interpreting that decision, merely stated on page 429 of 48 F.2d, on page 1121 of 18 CCPA that:

"Ductile thorium and the products produced therefrom and claimed in appellants' application were clearly and adequately described in the references of record. Accordingly, in view of the decisions hereinbefore referred to, the question of the operativeness of the methods disclosed in the references is not involved in a determination of the issue of the patentability of the subject-matter of the involved claims."

The Von Bramer case also concerned a rejection based on a reference patent alleged to disclose an inoperative invention. The court held that "It is not necessary that a reference patent for a device or chemical compound disclose an operative process for reproducing the article or product." Authority cited for this proposition was the Cohn, Marden, Bifocal and other cases.

Implicit in all of these cases is the concept of a certain degree of knowledge possessed by one skilled in the arts involved concerning the disclosure of the prior publication and the concept which was sought to be patented, to the end that *this knowledge taken with the disclosure of the printed publications*, was sufficient to place the disclosed invention in the possession of the public. To the extent, if any, that these decisions may conflict with this analysis of the Cohn case, we disagree with them and do not find them conclusive of the issue here.

In the Michalek case, the court stated that skilled workers would, as a matter of course, be able to utilize the process disclosed by the reference to get results within the limits of the product claims of the application at bar. We think this fact situation is sufficient to distinguish this case.

The Board of Appeals cited Merck and Co., Inc. v. Marzall, 91 U.S.App.D.C. 50, 197 F.2d 206. Contrary to the Board of Appeals' position, this case is believed to substantiate the conclusions we have

Cite as 301 F.2d 929 (1962)

here reached. The court stated in the Merck case:

"We are dealing solely with an application for a patent on the compound itself. Such an application must be denied if there has been any prior disclosure of the compound, even though no practical means for its isolation or manufacture was previously known." [Emphasis ours.]

In 197 F.2d at page 208, the court in footnote 2 sets forth the knowledge which existed at the time the invention was made. It is therein stated:

"2. A witness called by plaintiffs-appellants testified on cross-examination:

* * * * *

"Q. Now, with thiamin monobromide at hand, would there have been any difficulty for you as an organic chemist to prepare the thiamin mononitrate?

"A. I think if I had been asked at the time that this application was filed to prepare thiamin mononitrate I would have come up with it in very short order. I was confident that such a compound was capable of existence and could be made.

"Q. With little difficulty? A. Yes."

We think the Merck case must be read in the light of the fact that the knowledge of chemists skilled in producing the compound there in issue was such that a mere disclosure of the chemical constitution of the compound was enough to allow such chemists to produce the disclosed compound. Even in the chemical art, however, where the knowledge of skilled artisans is great, there are limitations on the availability of disclosures in printed publications as bars under section 102 (b).

In the Baranaukas case, this court said, after considering several of the above cases, "we feel constrained to point out that there are limits to the doctrine of those cases * * *. Certainly they do not extend so far as to permit publication of theoretical lists of hundreds or

thousands of possible compounds to deny patent protection on such compounds to those who actually discovered them later."

In Shell Development Co. v. Watson, D.C., 149 F.Supp. 279, affirmed 102 U.S. App.D.C. 297, 252 F.2d 861, which the Patent Office further cites to support its position, the court relied on the Merck case and stated further:

"A clear description in a prior publication is all that is necessary under the law to bar a subsequent inventor from obtaining a patent on the identical thing. In other words, a prior publication, in order to defeat a patent, need only exhibit the thing claimed in such an intelligible manner as to *enable persons skilled in the art to which the invention is related, to comprehend it*. Defendant's refusal to grant the claim sought here based upon the Ring Index publication was proper for the Court holds that the name and the structural formula contained in the Ring Index publication constitutes a sufficient description to anticipate. Plaintiff's claim 13 is clearly described in the publication within the meaning of the statutory language. I find for the defendant." [Emphasis ours.]

The court in the Shell case cited the Merck case as its authority. It is therefore in this light that we must construe the court's use of the word *comprehend*. So construed, the Shell case holds that the publication *in the light of the knowledge possessed by those skilled in the art* was sufficient to bar the grant of a patent. We do not find this to be inconsistent with our holding based on contrary facts in the case at bar.

Finally, there is the decision of *In re Decker*, 1911 C.D. 274, 36 App.D.C. 104, 162 O.G. 999. In this case, as in others which we have previously discussed, the holding of the Cohn case is believed to have been erroneously construed because of an incomplete analysis of the entire opinion of the court. In the Decker case the court said "the [Cohn] court held a

patent for a corset invalid on the ground that it had been fully described in a prior English patent, although the prior patent contained no description of the device by which the corset could be made." To this we again add the all-important words of the court in the Cohn case, that "the known state of the art at the time when * * * [the Johnson specification] * * * was filed and published, was sufficient to enable one skilled in the art of corset-making and in the use of the jacquard to make the patented corset." [Emphasis ours.]

CONCLUSION

[5] We therefore hold that descriptions in printed publications of new plant varieties, before they may be used as statutory bars under 35 U.S.C. § 102(b), must meet the same standards which must be met before a description in a printed publication becomes a bar in non-plant patent cases. 35 U.S.C. § 161 does not contain any limitation on this interpretation of the clause "described in a printed publication," and Congress has not "otherwise provided." When so considered, the descriptions in the printed publications here in issue do not meet the requirement of an "enabling" description, as the statute has been interpreted in numerous cases.

The Board of Appeals stated in its decision below that "it is no more absurd to use a disclosure which is not enabling as a bar than it is to grant a patent on such a disclosure; the disclosure in the specifications of these applications are admittedly just as unenabling as the disclosures of the publications." The answer to this apparent anomaly lies in 35 U.S.C. § 162 in which Congress "otherwise provided" by specifically allowing for such a description in plant patent applications.

9. An analogy also may be drawn between the pictures of the roses shown in the printed publications and pictures of machines in printed publications which have been held to be insufficient descriptions of the patented invention. See footnote 1, Robinson on Patents, Sec. 326, in which it is stated:

No such allowance has been made in 35 U.S.C. § 102(b) with reference to the sufficiency of the description of new plant varieties in printed publications.

Another answer to this apparent "anomaly" is implicit in 35 U.S.C. § 163. The plant patent grant differs from that given with respect to other inventions. Infringers must be shown to have asexually reproduced or sold or used the plant on which the patent was granted. Cf. Cole v. Youdath, *supra*, Kim Bros. v. Hagler, *supra*, and Armstrong Nurseries, Inc. v. Smith et al., *supra*. This section implicitly recognizes there is no possibility of producing the plant *from a disclosure* as 35 U.S.C. § 112 contemplates. Therefore, there is no requirement for any how-to-make disclosure in the application for a plant patent.

The mere description of the plant is not necessarily an "enabling" disclosure. Such descriptions, just as in the case of other types of inventions, in order to bar the issuance of a patent, must be capable, when taken in conjunction with the knowledge of those skilled in the art to which they pertain, of placing the invention in the possession of those so skilled.

The descriptions of the new roses in the instant publications,⁹ are incapable of placing these roses in the public domain by their descriptions when interpreted in the light of the knowledge now possessed by plant breeders. The roses disclosed in the appealed applications are not, therefore, "described in a printed publication" within the meaning of 35 U.S.C. § 102(b).

The decision of the Board of Appeals is reversed.

Reversed.

MARTIN, J., sat but did not participate because of illness.

"That a picture or drawing without printed text is not a publication, see New Process Fermentation Co. v. Koch (C.C.1884), 21 F. 580; 29 O.G. 535; Reeves v. Keystone Bridge Co. (1872), Fed.Cas.No.11,660, 1 O.G. 466, 5 Fish. Pat.Cas. 456, 9 Phila. 368; Judson v. Cope (1860), Fed.Cas.No.7,565, 1 Bond 327, 1 Fish.Pat.Cas. 615."

383 U.S. 39

UNITED STATES, Petitioner,**v.****Bert N. ADAMS et al.****No. 55.**

Argued Oct. 14, 1965.

Decided Feb. 21, 1966.

Action against government for patent infringement and for breach of implied contract to pay compensation for use of invention. The Court of Claims, 165 Ct.Cl. 576, 330 F.2d 622, entered judgment for patentee upon determining that patent was valid and infringed, and thereafter decided contract claims; certiorari was granted. The Supreme Court, Mr. Justice Clark, held that Patent No. 2,332,210 relating to nonrechargeable electrical battery comprising magnesium and cuprous chloride electrodes placed in container and activated by either plain or salt water was not invalid for lack of novelty or for obviousness.

Affirmed.

Mr. Justice White dissented.

1. Courts ◊389

Ninety-day period for filing petition for writ of certiorari did not begin with Court of Claims' initial judgment with respect to patent infringement, but rather began with date of amendment of judgment determining certain additional claims, where defendant government's liability was inextricably linked with alleged contract action which was not determined until latter judgment.

2. Courts ◊389

Time for filing petition for certiorari runs from date of order overruling motion to amend judgment.

3. Courts ◊389

That government petitioner failed to comply with requirements of Supreme

Court Rules as to service did not defeat certiorari jurisdiction, where requirements were not jurisdictional, no prejudice resulted, and failure was inadvertent. Supreme Court Rules, rules 21, subd. 1, 38, 28 U.S.C.A.

4. Patents ◊18, 37, 46

Novelty and nonobviousness as well as utility are separate tests of patentability and all must be satisfied in valid patent. 35 U.S.C.A. §§ 102(a), 103.

5. Patents ◊165(1), 167(1¼)

Claims of patent limit invention, and specifications cannot be utilized to expand patent monopoly.

6. Patents ◊165(1), 167(1)

Claims of patent are to be construed in the light of specifications and both are to be read with view to ascertaining the invention.

7. Patents ◊37

Inoperable invention or one which fails to achieve its intended result does not negative novelty. 35 U.S.C.A. § 102 (a).

8. Patents ◊18

Known disadvantages in old devices which would naturally discourage search for new inventions may be taken into account in determining obviousness. 35 U.S.C.A. § 103.

9. Patents ◊328

Patent No. 2,332,210 relating to nonrechargeable electrical battery comprising magnesium and cuprous chloride electrodes placed in container and activated by either plain or salt water was not invalid for lack of novelty or for obviousness. 35 U.S.C.A. §§ 102(a), 103.



John W. Douglas, Washington, D. C., for petitioner.

John A. Reilly, New York City, for respondents.

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Mr. Justice CLARK delivered the opinion of the Court.

This is a companion case to No. 11, Graham v. John Deere Co., 383 U.S. 1, 86 S.Ct. 684, decided this day along with Nos. 37 and 43, Calmar, Inc. v. Cook Chemical Co. and Colgate-Palmolive Co. v. Cook Chemical Co. The United States seeks review of a judgment of the Court of Claims, holding valid and infringed a patent on a wet battery issued to

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Adams.

This suit under 28 U.S.C. § 1498 (1964 ed.) was brought by Adams and others holding an interest in the patent against the Government charging both infringement and breach of an implied contract to pay compensation for the use of the invention. The Government challenged the validity of the patent, denied that it had been infringed or that any contract for its use had ever existed. The Trial Commissioner held that the patent was valid and infringed in part but that no contract, express or implied, had been established. The Court of Claims adopted these findings, initially reaching only the patent questions, 330 F.2d 622, 165 Ct.Cl. 576, but subsequently, on respondents' motion to amend the judgment, deciding the contract claims as well. 330 F.2d, at 634, 165 Ct.Cl., at 598. The United States sought certiorari on the patent validity issue only. We granted the writ, along with the others, in order to settle the important issues of patentability presented by the four cases. 380 U.S. 949, 85 S.Ct. 1090, 13 L.Ed.2d 968. We affirm.

I.

[1, 2] While this case is controlled on the merits by No. 11, Graham, 383 U.S. 1, 86 S.Ct. 684, respondents have raised threshold issues as to our jurisdiction which require separate handling. They say that the petition for certiorari came

1. Where a timely motion is filed, the time in such cases runs from the date of the order overruling the motion. See Department of Banking v. Pink, 317 U.S. 264, 267, 63 S.Ct. 233, 235, 87 L.Ed. 254 (1942); United States v. Crescent

too late, contending that the 90-day period for filing began with the date of the initial judgment rather than the date of the decision on the contract issue, citing F.T.C. v. Minneapolis-Honeywell Co., 344 U.S. 206, 73 S.Ct. 245, 97 L.Ed. 245 (1952). We cannot agree; first, because that case did not involve a timely motion to amend the judgment¹ and, secondly, because here the Government's liability was inextricably

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linked with the alleged contract action which was not determined until the latter judgment.

[3] Nor is there merit in respondents' contention that the Government failed to comply with the requirements of our Rules 21(1) and 33 as to service, since these requirements are not jurisdictional, no prejudice resulted and the failure was inadvertent.

We turn now to the merits.

II.

The Patent in Issue and Its Background.

The patent under consideration, U. S. No. 2,322,210, was issued in 1943 upon an application filed in December 1941 by Adams. It relates to a nonrechargeable, as opposed to a storage, electrical battery. Stated simply, the battery comprises two electrodes—one made of magnesium, the other of cuprous chloride—which are placed in a container. The electrolyte, or battery fluid, used may be either plain or salt water.

The specifications of the patent state that the object of the invention is to provide constant voltage and current without the use of acids, conventionally employed in storage batteries, and without the generation of dangerous fumes. Another object is "to provide a battery which is relatively light in weight with respect to capacity" and which "may be

Amusement Co., 323 U.S. 173, 177, 65 S.Ct. 254, 256, 89 L.Ed. 160 (1944); Forman v. United States, 361 U.S. 416, 426, 80 S.Ct. 481, 487, 4 L.Ed.2d 412 (1960).

manufactured and distributed to the trade in a dry condition and rendered serviceable by merely filling the container with water." Following the specifications, which also set out a specific embodiment of the invention, there appear 11 claims. Of these, principal reliance has been placed upon Claims 1 and 10, which read:

"1. A battery comprising a liquid container, a magnesium electropositive electrode inside the container and having an exterior terminal, a fused cuprous chloride electronegative electrode, and a terminal connected with said electronegative electrode."

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"10. In a battery, the combination of a magnesium electropositive electrode, and an electronegative electrode comprising cuprous chloride fused with a carbon catalytic agent."

For several years prior to filing his application for the patent, Adams had worked in his home experimenting on the development of a wet battery. He found that when cuprous chloride and magnesium were used as electrodes in an electrolyte of either plain water or salt water an improved battery resulted.

The Adams invention was the first practical, water-activated, constant potential battery which could be fabricated and stored indefinitely without any fluid in its cells. It was activated within 30 minutes merely by adding water. Once activated, the battery continued to deliver electricity at a voltage which remained essentially constant regardless of the rate at which current was withdrawn. Furthermore, its capacity for generating current was exceptionally large in comparison to its size and weight. The battery was also quite efficient in that substantially its full capacity could be obtained over a wide range of currents. One disadvantage, however, was that once activated the battery could not be

shut off; the chemical reactions in the battery continued even though current was not withdrawn. Nevertheless, these chemical reactions were highly exothermic, liberating large quantities of heat during operation. As a result, the battery performed with little effect on its voltage or current in very low temperatures. Relatively high temperatures would not damage the battery. Consequently, the battery was operable from 65° below zero Fahrenheit to 200° Fahrenheit. See findings at 330 F.2d, at 632, 165 Ct.Cl., at 591-592.

Less than a month after filing for his patent, Adams brought his discovery to the attention of the Army and Navy. Arrangements were quickly made for demonstrations

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before the experts of the United States Army Signal Corps. The Signal Corps scientists who observed the demonstrations and who conducted further tests themselves did not believe the battery was workable. Almost a year later, in December 1942, Dr. George Vinal, an eminent government expert with the National Bureau of Standards, still expressed doubts. He felt that Adams was making "unusually large claims" for "high watt hour output per unit weight," and he found "far from convincing" the graphical data submitted by the inventor showing the battery's constant voltage and capacity characteristics. He recommended, "Until the inventor can present more convincing data about the performance of his [battery] cell, I see no reason to consider it further."

However, in November 1943, at the height of World War II, the Signal Corps concluded that the battery was feasible. The Government thereafter entered into contracts with various battery companies for its procurement. The battery was found adaptable to many uses. Indeed, by 1956 it was noted that "[t]here can be no doubt that the addition of water activated batteries to the family of power sources has brought about developments which would otherwise have been tech-

Cite as 86 S.Ct. 708 (1966)

nically or economically impractical." See Tenth Annual Battery Research and Development Conference, Signal Corps Engineering Laboratories, Fort Monmouth, N. J., p. 25 (1956). Also, see Finding No. 24, 330 F.2d, at 632, 165 Ct.Cl., at 592.

Surprisingly, the Government did not notify Adams of its changed views nor of the use to which it was putting his device, despite his repeated requests. In 1955, upon examination of a battery produced for the Government by the Burgess Company, he first learned of the Government's action. His request for compensation was denied in 1960, resulting in this suit.

III.

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The Prior Art.

The basic idea of chemical generation of electricity is, of course, quite old. Batteries trace back to the epic discovery by the Italian scientist Volta in 1795, who found that when two dissimilar metals are placed in an electrically conductive fluid an electromotive force is set up and electricity generated. Essentially, the basic elements of a chemical battery are a pair of electrodes of different electrochemical properties and an electrolyte which is either a liquid (in "wet" batteries) or a moist paste of various substances (in the so-called "dry-cell" batteries). Various materials which may be employed as electrodes, various electrolyte possibilities and many combinations of these elements have been the object of considerable experiment for almost 175 years. See generally, Vinal, *Primary Batteries* (New York 1950).

At trial, the Government introduced in evidence 24 patents and treatises as representing the art as it stood in 1938, the time of the Adams invention.² Here, however, the Government has relied pri-

marily upon only six of these references³ which we may summarize as follows.

The Niaudet treatise describes the Marie Davy cell invented in 1860 and De La Rue's variations on it. The battery comprises a zinc anode and a silver chloride cathode. Although it seems to have been capable of working in an electrolyte of pure water, Niaudet says the battery was of "little interest" until De La Rue used a solution of ammonium chloride as an electrolyte. Niaudet also states that "[t]he capital advantage of this battery,

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as in all where zinc with sal ammoniac [ammonium chloride solution] is used, consists in the absence of any local or internal action as long as the electric circuit is open; in other words, this battery does not work upon itself." Hayes likewise discloses the De La Rue zinc-silver chloride cell, but with certain mechanical differences designed to restrict the battery from continuing to act upon itself.

The Wood patent is relied upon by the Government as teaching the substitution of magnesium, as in the Adams patent, for zinc. Wood's patent, issued in 1928, states: "It would seem that a relatively high voltage primary cell would be obtained by using * * * magnesium as the * * * [positive] electrode and I am aware that attempts have been made to develop such a cell. As far as I am aware, however, these have all been unsuccessful, and it has been generally accepted that magnesium could not be commercially utilized as a primary cell electrode." Wood recognized that the difficulty with magnesium electrodes is their susceptibility to chemical corrosion by the action of acid or ammonium chloride electrolytes. Wood's solution to this problem was to use a

2. The references are listed in the opinion of the Court of Claims, 330 F.2d, at 631, 165 Ct.Cl., at 590.

3. Niaudet, *Elementary Treatise on Electric Batteries* (Fishback translation 1880);

Hayes U.S. Patent No. 282,634 (1883); Wood U.S. Patent No. 1,696,873 (1928); Codd, *Practical Primary Cells* (London 1929); Wensky British Patent No. 49 of 1891; and Skrivanoff British Patent No. 4,341 (1880).

"neutral electrolyte containing a strong soluble oxidizing agent adapted to reduce the rate of corrosion of the magnesium electrode on open circuit." There is no indication of its use with cuprous chloride, nor was there any indication that a magnesium battery could be water-activated.

The Codd treatise is also cited as authority for the substitution of magnesium. However, Codd simply lists magnesium in an electromotive series table, a tabulation of electrochemical substances in descending order of their relative electropositivity. He also refers to magnesium in an example designed to show that various substances are more electropositive than others, but the discussion involves a cell containing an acid which would destroy magnesium within minutes. In short, Codd indicates, by inference, only that magnesium is a theoretically

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desirable electrode by virtue of its highly electropositive character. He does not teach that magnesium could be combined in a water-activated battery or that a battery using magnesium would have the properties of the Adams device. Nor does he suggest, as the Government indicates, that cuprous chloride could be substituted for silver chloride. He merely refers to the cuprous ion—a generic term which includes an infinite number of copper compounds—and in no way suggests that cuprous chloride could be employed in a battery.

The Government then cites the Wensky patent which was issued in Great Britain in 1891. The patent relates to the use of cuprous chloride as a depolarizing agent. The specifications of his patent disclose a battery comprising zinc and copper electrodes, the cuprous chloride being added as a salt in an electrolyte solution containing zinc chloride as well. While Wensky recognized that cuprous chloride could be used in a constant-current cell, there is no indication that he taught a water-activated system or that magnesium could be incorporated in his battery.

Finally, the Skrivanoff patent depended upon by the Government relates to a battery designed to give intermittent, as opposed to continuous, service. While the patent claims magnesium as an electrode, it specifies that the electrolyte to be used in conjunction with it must be a solution of "alcoline, chloro-chromate, or a permanganate strengthened with sulphuric acid." The cathode was a copper or carbon electrode faced with a paste of "phosphoric acid, amorphous phosphorous, metallic copper in spangles, and cuprous chloride." This paste is to be mixed with hot sulfuric acid before applying to the electrode. The Government's expert testified in trial that he had no information as to whether the cathode, as placed in the battery, would, after having been mixed with the other chemicals prescribed, actually

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contain cuprous chloride. Furthermore, respondents' expert testified, without contradiction, that he had attempted to assemble a battery made in accordance with Skrivanoff's teachings, but was met first with a fire when he sought to make the cathode, and then with an explosion when he attempted to assemble the complete battery.

IV.

The Validity of the Patent.

[4] The Government challenges the validity of the Adams patent on grounds of lack of novelty under 35 U.S.C. § 102 (a) (1964 ed.) as well as obviousness under 35 U.S.C. § 103 (1964 ed.). As we have seen in *Graham v. John Deere Co.*, 383 U.S. 1, 86 S.Ct. 684, novelty and non-obviousness—as well as utility—are separate tests of patentability and all must be satisfied in a valid patent.

The Government concludes that wet batteries comprising a zinc anode and silver chloride cathode are old in the art; and that the prior art shows that magnesium may be substituted for zinc and cuprous chloride for silver chloride.

Cite as 86 S.Ct. 708 (1966)

Hence, it argues that the "combination of magnesium and cuprous chloride in the Adams battery was not patentable because it represented either no change or an insignificant change as compared the prior battery designs." And, despite "the fact that, wholly unexpectedly, the battery showed certain valuable operating advantages over other batteries [these advantages] would certainly not justify a patent on the essentially old formula."

[5, 6] There are several basic errors in the Government's position. First, the fact that the Adams battery is water-activated sets his device apart from the prior art. It is true that Claims 1 and 10, *supra*, do not mention a water electrolyte, but, as we have noted, a stated object of the invention was to provide a battery rendered serviceable by the mere addition of water. While the claims of a

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patent limit the invention, and specifications cannot be utilized to expand the patent monopoly, *Burns v. Meyer*, 100 U.S. 671, 672, 25 L.Ed. 733 (1880); *McCarty v. Lehigh Valley R. Co.*, 160 U.S. 110, 116, 16 S.Ct. 240, 242, 40 L.Ed. 358 (1895), it is fundamental that claims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the invention, *Seymour v. Osborne*, 11 Wall. 516, 547, 20 L.Ed. 33 (1871); *Schriber-Schroth Co. v. Cleveland Trust Co.*, 311 U.S. 211, 312 U.S. 654, 61 S.Ct. 235, 85 L.Ed. 132 (1940); *Schering Corp. v. Gilbert*, 2 Cir., 153 F.2d 428 (1946). Taken together with the stated object of disclosing a water-activated cell, the lack of reference to any electrolyte in Claims 1 and 10 indicates that water alone could be used. Furthermore, of the 11 claims in issue, three of the narrower ones include references to specific electrolyte solutions comprising water and certain salts. The obvious implication from the absence of any mention of an electrolyte—a necessary element in any battery—in the other eight claims reinforces this conclusion. It is evident that respond-

ents' present reliance upon this feature was not the afterthought of an astute patent trial lawyer. In his first contact with the Government less than a month after the patent application was filed, Adams pointed out that "no acids, alkalines or any other liquid other than plain water is used in this cell. Water does not have to be distilled. * * *" Letter to Charles F. Kettering (January 7, 1942), R., pp. 415, 416. Also see his letter to the Department of Commerce (March 28, 1942), R., p. 422. The findings, approved and adopted by the Court of Claims, also fully support this conclusion.

Nor is *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 S.Ct. 1143, 89 L.Ed. 1644 (1945), apposite here. There the patentee had developed a rapidly drying printing ink. All that was needed to produce such an ink was a solvent which evaporated quickly upon heating. Knowing that the boiling point of a solvent is an indication of its rate of

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evaporation, the patentee merely made selections from a list of solvents and their boiling points. This was no more than "selecting the last piece to put into the last opening in a jig-saw puzzle." 325 U.S., at 335, 65 S.Ct. at 1147. Indeed, the Government's reliance upon *Sinclair & Carroll* points up the fallacy of the underlying premise of its case. The solvent in *Sinclair & Carroll* had no functional relation to the printing ink involved. It served only as an inert carrier. The choice of solvent was dictated by known, required properties. Here, however, the Adams battery is shown to embrace elements having an interdependent functional relationship. It begs the question, and overlooks the holding of the Commissioner and the Court of Claims, to state merely that magnesium and cuprous chloride were individually known battery components. If such a combination is novel, the issue is whether bringing them together as taught by Adams was obvious in the light of the prior art.

[7] We believe that the Court of Claims was correct in concluding that the Adams battery is novel. Skrivanoff disclosed the use of magnesium in an electrolyte completely different from that used in Adams. As we have mentioned, it is even open to doubt whether cuprous chloride was a functional element in Skrivanoff. In view of the unchallenged testimony that the Skrivanoff formulation was both dangerous and inoperable, it seems anomalous to suggest that it is an anticipation of Adams. An inoperable invention or one which fails to achieve its intended result does not negative novelty. *Smith v. Snow*, 294 U.S. 1, 17, 55 S.Ct. 279, 285, 79 L.Ed. 721 (1935). That in 1880 Skrivanoff may have been able to convince a foreign patent examiner to issue a patent on his device has little significance in the light of the foregoing.

Nor is the Government's contention that the electrodes of Adams were mere substitutions of pre-existing battery designs supported by the prior art. If the use of magnesium

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for zinc and cuprous chloride for silver chloride were merely equivalent substitutions, it would follow that the resulting device—Adams—would have equivalent operating characteristics. But it does not. The court below found, and the Government apparently admits, that the Adams battery "wholly unexpectedly" has shown "certain valuable operating advantages over other batteries" while those from which it is claimed to have been copied were long ago discarded. Moreover, most of the batteries relied upon by the Govern-

4. It is interesting to note in this connection that in testing the Adams cell the Signal Corps compared it with batteries of this type. The graphical results of the comparison are shown in respondents' brief, p. 51.
5. The standard text in the art states: "The best answer to the oft-repeated question: 'How much current can I draw from my standard cell?' is 'None!'" Vi-

ment were of a completely different type designed to give intermittent power and characterized by an absence of internal action when not in use. Some provided current at voltages which declined fairly proportionately with time.⁴ Others were so-called standard cells which, though producing a constant voltage, were of use principally for calibration or measurement purposes. Such cells cannot be used as sources of power.⁵ For these reasons we find no equivalency.⁶

[8] We conclude the Adams battery was also nonobvious. As we have seen, the operating characteristics of the Adams battery have been shown to have been unexpected and to have far surpassed then-existing wet batteries. Despite the fact that each of the elements of the Adams battery was well known in the prior art, to combine

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them as did Adams required that a person reasonably skilled in the prior art must ignore that (1) batteries which continued to operate on an open circuit and which heated in normal use were not practical; and (2) water-activated batteries were successful only when combined with electrolytes detrimental to the use of magnesium. These long-accepted factors, when taken together, would, we believe, deter any investigation into such a combination as is used by Adams. This is not to say that one who merely finds new uses for old inventions by shutting his eyes to their prior disadvantages thereby discovers a patentable innovation. We do say, however, that known disadvantages in old devices which would

nal, Primary Batteries, p. 212 (New York 1950); see also Ruben U. S. Patent No. 1,920,151 (1933).

6. In their motion to dismiss the writ of certiorari as improvidently granted, respondents asserted that the Government was estopped to claim equivalency of cuprous chloride and silver chloride. We find no merit in this contention and, therefore, deny the motion.

Cite as 86 S.Ct. 708 (1966)

naturally discourage the search for new inventions may be taken into account in determining obviousness.

[9] Nor are these the only factors bearing on the question of obviousness. We have seen that at the time Adams perfected his invention noted experts expressed disbelief in it. Several of the same experts subsequently recognized the significance of the Adams invention, some even patenting improvements on the same system. Fischbach et al., U. S. Patent No. 2,636,060 (1953). Furthermore, in a crowded art replete with a century and a half of advancement, the Patent Office found not one reference to

cite against the Adams application. Against the subsequently issued improvement patents to Fischbach, *supra*, and to Chubb, U. S. Reissue Patent No. 23,883 (1954), it found but three references prior to Adams—none of which are relied upon by the Government.

We conclude that the Adams patent is valid. The judgment of the Court of Claims is affirmed. It is so ordered.

Affirmed.

Mr. Justice WHITE dissents.

Mr. Justice FORTAS took no part in the consideration or decision of this case.

cient aeration to sustain a stable detonation, is a function of the ratios of emulsion to solid constituent. Specifically, at ratios of 30% emulsion and 70% solid constituent, which are common to the Clay Patent, the Egly Patent, and the Butterworth Patent, there is inherently sufficient aeration to sustain a stable detonation, barring extraordinary efforts to grind and screen the ammonium nitrate used in the solid constituent.

This court discerns no clear error in the district court's factual determination that the prior art inherently possesses sufficient aeration to enhance sensitivity to a substantial degree within the overlapping ranges. Nor does this court discern clear error in the district court's finding of anticipation based on either Egly or Butterworth. To uphold the Clay patent and its reissue would preclude the public from practicing the prior art.

III.

In conclusion, this court affirms the district court's finding of invalidity with respect to claims 1, 2, 3, 10, 12, 13, and 14 of the Clay patent and the Clay reissue patent. This court therefore does not address the district court's additional finding of non-infringement.

COSTS

Each party shall bear its own costs.

AFFIRMED.



PROCESS CONTROL CORPORATION,

Plaintiff-Appellant,

v.

HYDRECLAIM CORPORATION,

Defendant-Cross Appellant.

Nos. 98-1082, 98-1277.

United States Court of Appeals,
Federal Circuit.

Sept. 7, 1999.

Rehearing Denied Oct. 25, 1999.

Competitor brought declaratory judgment action against patentee asserting invalidity, unenforceability, and noninfringement of patent directed to continuous gravimetric blenders used in the plastics industry. The United States District Court for the Northern District of Georgia, Jack T. Camp, J., sustained validity and enforceability of patent and found willful infringement by competitor. Competitor appealed, and patentee cross-appealed. The Court of Appeals, Gajarsa Circuit Judge, held that: (1) term "discharge rate," as used in separate clauses, would be construed as having same meaning, and (2) claims were invalid for failure to comply with utility and enablement requirements.

Reversed in part and vacated in part.

1. Patents \Leftrightarrow 324.5

Construction of patent is a matter of law that Court of Appeals reviews de novo.

2. Patents \Leftrightarrow 157(2), 167(1)

Court of Appeals should attempt to construe patent claims to preserve their validity, reading them in light of the specification.

3. Patents \Leftrightarrow 101(2)

Under patent for continuous gravimetric blender, which contained limitation of

Cite as 190 F.3d 1350 (Fed. Cir. 1999)

determining the material processing rate by adding (1) the sum of the material discharge rates of the individual material ingredients to a common hopper; and (2) the discharge rate of the blended materials from the common hopper to the processing machine, term "discharge rate," as used in separate clauses, would be construed as having same meaning, since clauses used identical language, notwithstanding written description allegedly showing that latter use of term had different meaning.

4. Patents \Leftrightarrow 165(1)

Courts are not permitted to redraft patent claims.

5. Patents \Leftrightarrow 165(3)

Where patent claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated, thus preventing unduly burdening competitors who must determine the scope of the claimed invention based on an erroneously drafted claim.

6. Patents \Leftrightarrow 99

Patent statute's enablement requirement requires that the specification adequately discloses to one skilled in the relevant art how to make, or in the case of a process, how to carry out, the claimed invention without undue experimentation. 35 U.S.C.A. § 112.

7. Patents \Leftrightarrow 324.5

Patent statute's definiteness requirement is a legal requirement, based on the court's role as construer of patent claims, that is reviewed *de novo*. 35 U.S.C.A. § 112.

8. Patents \Leftrightarrow 101(6)

Under patent statute's definiteness requirement, claim language must set forth clearly the domain over which the appli-

cant seeks exclusive rights; the test for whether a claim meets the definiteness requirement is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. 35 U.S.C.A. § 112.

9. Patents \Leftrightarrow 47

Patent statute's utility requirement mandates that any patentable invention be useful and, accordingly, the subject matter of the claim must be operable. 35 U.S.C.A. § 101.

10. Patents \Leftrightarrow 47, 99

If a patent claim fails to meet the utility requirement because it is not useful or operative, then it also fails to meet the how-to-use aspect of the enablement requirement. 35 U.S.C.A. §§ 101, 112.

11. Patents \Leftrightarrow 46, 99

While an otherwise valid patent covering a meritorious invention should not be struck down simply because of the patentee's misconceptions about scientific principles concerning the invention, when the claimed subject matter is inoperable, the patent may indeed be invalid for failure to meet the patent statute's utility requirement and enablement requirement. 35 U.S.C.A. §§ 101, 112.

12. Patents \Leftrightarrow 324.55(3.1)

Patent utility is a factual issue, which Court of Appeals reviews for clear error. 35 U.S.C.A. § 101.

13. Patents \Leftrightarrow 324.5

Whether a disclosure is enabling under the patent statute is a legal conclusion, based upon underlying factual inquiries, and subject to *de novo* review. 35 U.S.C.A. § 112.

14. Patents \Leftrightarrow 46, 99

Patent claims directed to continuous gravimetric blenders used in the plastics

industry were invalid for failure to comply with utility and enablement requirements, because claims, as properly construed, violated principle of conservation of mass, by requiring the determination of a quantity from the sum of that exact same quantity and another quantity that was not zero, and invention was thus inoperable. 35 U.S.C.A. §§ 101, 112.

Todd Deveau, Deveau, Colton & Marquis, Atlanta, Georgia, argued for the plaintiff-appellant. With him on the brief were Harold L. Marquis and Ryan A. Schneider.

Bradley A. Slutsky, King & Spaulding, Atlanta, Georgia, argued for the defendant-cross appellant. With him on the brief were Joseph R. Bankoff and Christian S. Genetski.

Before BRYSON, Circuit Judge,
FRIEDMAN, Senior Circuit Judge, and
GAJARSA, Circuit Judge.

GAJARSA, Circuit Judge.

Process Control Corporation ("Process Control") appeals the decision of the United States District Court for the Northern District of Georgia, Docket No. 93-CV-2795, wherein the district court sustained the validity and enforceability of U.S. Patent No. 5,148,943 owned by HydReclaim Corporation ("HydReclaim"), and found that Process Control had willfully infringed certain claims of that patent. Because the district court erred in its construction of the claims at issue and because the claims as written and correctly construed are invalid, we reverse the district court's determination that the patent is valid and vacate its finding of infringement.

BACKGROUND

HydReclaim is the owner of U.S. Patent No. 5,148,943 ("the '943 patent") directed

to continuous gravimetric blenders used in the plastics industry. These blenders mix multiple solid ingredients in appropriate proportions based on weight and feed the mixture to a weighed common hopper. The resulting mixture is then discharged from the weighed common hopper to a processing machine, i.e., an extruder, that heats and combines the blended ingredients into a desired final product.

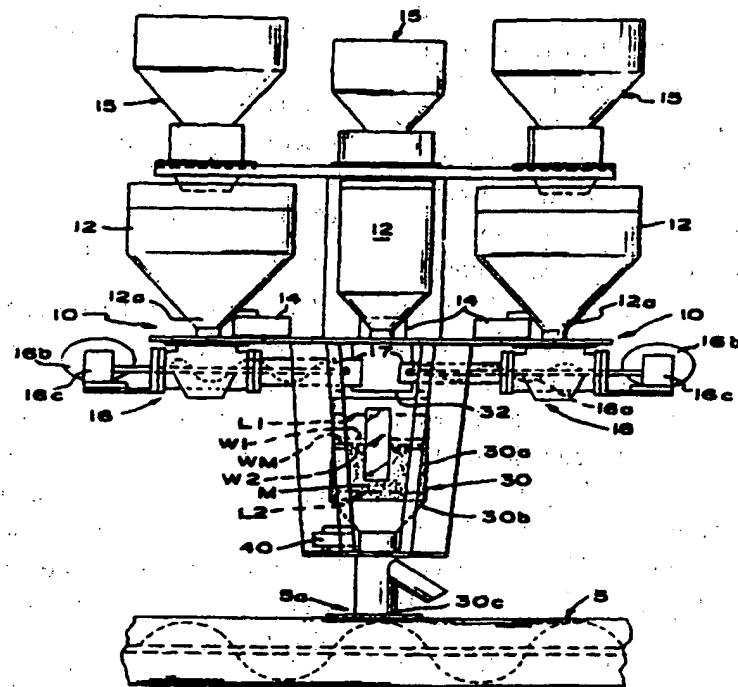
Prior to the invention described in the '943 patent, the discharge rate of continuous gravimetric blenders was controlled by using level sensing devices that measured and maintained constant the volume of blended material in the common hopper. Because the densities of the materials to be blended varied, such prior art devices encountered various drawbacks. These drawbacks included poor control over the accuracy of the recipe provided by the blender to the extruder and poor control over the discharge rate of the blended materials from the common hopper to the extruder because of the inability to determine the weight of the blended material leaving the common hopper. These drawbacks resulted in a final extruded product of inconsistent quality.

The invention described in the '943 patent solved these problems by measuring the weight, rather than the volume, of the material in the common hopper and maintaining that weight in the common hopper at a constant value. A device measures the rate at which the individual ingredient materials are discharged into the common hopper, and another device measures the change in weight of the common hopper over time. Using these two variables and the basic principle of mass balancing, the rate of the processing machine is determined, i.e., the rate at which material is processed by the extruder is learned. By matching that learned gravimetric speed of the extruder to the gravimetric speed of the blender, a constant weight of blended material in the common hopper is maintained.

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In particular, as shown in Figure 2 of the '943 patent reproduced below, the ingredients are discharged from individual ingredient hoppers 12 and directed to a

blending chamber 32, after which the blended ingredients are directed to a common hopper 30 equipped with a weighing device 40. '943 Patent, col. 5, ll. 26-32.

FIG - 2

A master computer control unit (not shown) is coupled to individual metering devices 10 associated with the individual ingredient hoppers. The metering devices control the material discharge rate of each individual ingredient to maintain a preset ratio of the ingredients. *Id.* at col. 3, ll. 51-58. The master computer control unit is also coupled to the weighing device 40 associated with the common hopper for determining a discharge rate of the blended ingredients from the common hopper to the processing machine 5 based on the weight loss of the common hopper over time. *Id.* at col. 3, ll. 35-39. The master computer control unit thus determines the material processing rate of the processing machine, *i.e.*, the extruder, based on the sum of the material discharge feed rates of the individual ingredients to the common hopper plus or minus the discharge rate of the blended ingredients from the common hopper to the processing machine. *Id.* at

col. 3, ll. 45-51. In other words, a constant weight of ingredients in the common hopper is maintained by matching the material processing rate of the processing machine (what comes *out* of the common hopper) to the sum of the individual ingredient discharge rates (what goes *into* the common hopper), by using information about the change in weight of the common hopper over time.

Process Control is a competitor of HydReclaim in the material blending business. Process Control uses three methods that are alleged by HydReclaim to infringe the '943 patent. Method One, performed by Process Control's BG blender, operates identically to HydReclaim's 470 blender, which embodies the invention disclosed in the '943 patent. Method Two operates to control the weight in the common hopper by using a high and a low control point, the weight oscillating between the control points. Method Three operates to control

the weight in the common hopper by using a set point controlled by a second variable, i.e., total blender rate. Method Three is based on a proportional integral derivative (PID) control system.

HydReclaim sued Process Control in Michigan in December 1992 for infringement of the '943 patent, but the action was dismissed for lack of jurisdiction. During subsequent settlement negotiations, Process Control filed the present declaratory judgment action in December 1993 in Georgia, asserting, *inter alia*, invalidity, unenforceability, and noninfringement of the '943 patent. During a bench trial, the district court construed the claims as urged by HydReclaim, sustained the validity of the '943 patent, found that Process Control had willfully infringed claims 1, 3–7, 11, and 13–14 of the '943 patent, found that the '943 patent was enforceable, and awarded HydReclaim a 15% reasonable royalty and its attorneys' fees and costs.

Process Control appeals, challenging the district court's claim construction, the finding of willful infringement, the determination of nonobviousness, the finding of enforceability, and the award of a 15% reasonable royalty. HydReclaim cross-appeals the refusal to award lost profits and to enhance the damages and the district court's exclusion of its damages experts at trial. As will be evident from the discussion below, we need reach only the issue of claim construction.

DISCUSSION

I. CLAIM CONSTRUCTION

A.

[1] Claim construction is a matter of law, see *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970–71, 34 USPQ2d 1321, 1322 (Fed.Cir.1995) (en banc), *aff'd*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), that we review *de*

novo, see *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1451, 46 USPQ2d 1169, 1171 (Fed.Cir.1998) (en banc).

B.

Claims 1–6 of the '943 patent are directed to a method of metering different material ingredients for discharge to a material processing machine, and claims 7–14 are directed to an apparatus for carrying out that method. Claims 1–7, 11, and 13–14 are at issue in this appeal, of which claims 1, 4, 7, and 14 are independent.

The district court determined that all of the claims at issue contained the limitation of determining the material processing rate by adding (1) the sum of the material discharge rates of the individual material ingredients to a common hopper, and (2) the discharge rate of the blended materials from the common hopper to the processing machine. See Order of September 30, 1997, ¶ 5. We agree with that analysis, and therefore our discussion of the limitations at issue in the context of claim 1 applies to all of the claims at issue on appeal.

Claim 1 provides:

1. A method of metering different material ingredients for discharge to a material processing machine, comprising:
 - [a] delivering to a common hopper a plurality of individual material ingredients at controllable individual material discharge rates,
 - [b] discharging material from said common hopper to said processing machine at a *discharge rate*,
 - [c] determining loss of weight of material in said hopper due to discharge of material therefrom,
 - [d] determining the material processing rate of the processing machine from the sum of the material discharge rates of the ingredients to the common hopper and the *discharge rate* of the

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material from the common hopper to the processing machine, and

[e] controlling the material discharge rates of the ingredients to the common hopper in response to said determined material processing rate as needed to maintain a preset recipe of said blended ingredients at said determined material processing rate.

(emphasis and paragraphing added).

Before the district court, the parties disputed whether "discharge rate" emphasized above in clauses [b] and [d] should be given the same meaning throughout the claim, as urged by Process Control, or whether the second emphasized occurrence means "change in weight of the common hopper," as urged by HydReclaim. Based on the written description, the district court construed the claim in accordance with HydReclaim's assertion, namely that the occurrence of "discharge rate" in clause [d] means "change in weight of the common hopper." See Order of September 30, 1997, ¶¶ 32-33. The district court determined that the patentee had specifically defined the second occurrence of "discharge rate" in his written description to mean "change in weight," relying on the following passages from the written description for its claim construction:

A master computer control unit is coupled to the weighing device of the common hopper for determining a discharge rate of the ingredients from the common hopper to the processing machine based on the *weight loss of the common hopper over time*. '943 Patent, col. 3, ll. 35-39 (emphasis added).

A weighing device 40, such as a precision, offset, cantilever load cell, is operably connected to and solely supports the common hopper 30 at the discharge end 30a. The weighing device 40 detects the *change in weight* of the blend M therein during the admission and discharge of material to and from the com-

mon hopper 30. '943 Patent, col. 5, ll. 44-50 (emphasis added).

A master digital computer control unit 50 (FIG.4) is coupled via interface 50a (e.g., RS485 serial network interfaces) to the weighing device 40 of the common hopper 30 for receiving *weight loss signals* therefrom (analog to digital converted signals) over time and determining a blend discharge rate from the common hopper 30 to the extrusion machine 5. '943 Patent, col. 5, ll. 50-57 (emphasis added).

The master computer control unit 50 continually determines minute differential *weight changes* in the common hopper 30 and calculates the precise differences in the sum of the material discharge rates of the metering units 10 and the extrusion rate. '943 Patent, col. 7, ll. 46-50 (emphasis added).

The district court concluded that "[i]f 'discharge rate' is construed as Process Control asserts [*i.e.*, the same as the first occurrence of discharge rate], this specification would be nonsensical." Order of September 30, 1997, ¶ 33.

C.

On appeal, Process Control challenges the district court's claim construction on various theories. First, as in the district court, Process Control asserts that "discharge rate" in clauses [b] and [d] should be given the same meaning throughout the claim, particularly as both occurrences include the language "from said [or the] common hopper to said [or the] processing machine." This construction, notes Process Control, obviates the lack of antecedent basis for the second occurrence of "discharge rate" in clause [d] and a concomitant finding of invalidity under 35 U.S.C. § 112, ¶ 2 which necessarily results from the district court's claim construction.

Second, Process Control argues that "discharge rate" is defined in the claims

themselves to mean "discharging [blended] material from said common hopper to said processing machine at a discharge rate." '943 Patent, claim 1, clause [b] (emphasis added). The references in the written description relied upon by the district court to redefine "discharge rate" to mean "change in weight" do not clearly redefine that term and, in any event, would redefine the term contrary to the explicit definition of that term in the claim itself.

Third, Process Control notes that claims 7-14 include the limitation of a "second weighing means . . . for detecting a change in weight of the ingredients" in the common hopper. According to Process Control, this demonstrates that the subsequent reference to "discharge rate" in clause [d] could not mean "change in weight" as determined by the district court, as use of different terms in a single claim indicates that those terms are not synonymous.

In response, HydReclaim defends the district court's claim construction, urging that the claims are to be construed in a way which will preserve their validity and secure the patentee his actual invention. This can only be done, asserts HydReclaim, by construing the claims in light of the written description, in "the natural manner in which they make sense." Process Control's asserted claim construction, as its own witnesses admitted, would require "determining something from some entity which includes what you are trying to measure," a construction that clearly does not make sense. HydReclaim also refutes Process Control's antecedent basis argument by asserting that "a discharge rate" in clause [b] is different from "the discharge rate" in clause [d], the former being an undetermined flow rate at that stage of the algorithm, the latter being an actually calculated flow rate based on loss of weight of material in the common hopper over time.

D.

[2] We agree with Process Control, although the parties present us with competing canons of claim construction with which to interpret the claims at issue on appeal. It is true, as HydReclaim urges, that we should attempt to construe the claims to preserve their validity, see *Smith v. Snow*, 294 U.S. 1, 14, 55 S.Ct. 279, 79 L.Ed. 721 (1935) (holding that "if the claim were fairly susceptible to two constructions, that should be adopted which will secure to the patentee his actual invention"); *Modine Mfg. Co. v. United States Int'l Trade Comm'n*, 75 F.3d 1545, 1556, 37 USPQ2d 1609, 1617 (Fed.Cir.1996) ("When claims are amenable to more than one construction, they should when reasonably possible be interpreted so as to preserve their validity."), reading them in light of the specification, see *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582, 39 USPQ2d 1573, 1576 (Fed.Cir. 1996).

[3] However, contrary to HydReclaim's assertions, this is not a case where the claim language is reasonably susceptible to two constructions. Rather, the claim as written by the patentee is susceptible to only one meaning. It is clear from the language of the claim itself that the term "a discharge rate" in clause [b] is referring to the same rate as the term "the discharge rate" in clause [d]. This conclusion necessarily results from the identical language associated with the term "discharge rate" in both clauses [b] and [d], namely "from the common hopper to the material processing machine." The presence of that identical language clearly indicates that "a discharge rate" in clause [b] is the same as "the discharge rate" in clause [d], both referring to the rate (in units of weight per unit of time) that material is discharged from the common hopper to the material processing machine. In addition, that conclusion avoids any lack of antecedent basis problem for the occure-

rence of "the discharge rate" in clause [d].¹

[4] The district court's attempt to use the written description to circumvent the plain language of the claim and the clear definition of the disputed claim language found therein was inappropriate. While we have held many times that a patentee can act as his own lexicographer to specifically define terms of a claim contrary to their ordinary meaning, *see, e.g., Digital Biometrics v. Identix, Inc.*, 149 F.3d 1335, 1344, 47 USPQ2d 1418, 1424 (Fed.Cir. 1998), the quoted portions from the written description above do not so clearly redefine "the discharge rate" in clause [d] so as to put a reasonable competitor or one reasonably skilled in the art on notice that the patentee intended to so redefine that claim term. *See Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 951 n. 15, 28 USPQ2d 1936, 1939 n. 15 (Fed.Cir.1993) (reasoning that the reasonable competitor standard is analytically equivalent to the reasonably skilled in the art standard). More importantly, we do not permit courts to redraft claims. *See Quantum Corp. v. Rodime, PLC*, 65 F.3d 1577, 1584, 36 USPQ2d 1162, 1168 (Fed.Cir.1995) ("Although we construe claims, if possible, so as to sustain their validity, . . . it is well settled that no matter how great the temptations of fairness or policy making, courts do not redraft claims."); *Becton Dickinson & Co. v. C.R. Bard Inc.*, 922 F.2d 792, 799 n. 6, 17 USPQ2d 1097, 1102 n. 6 (Fed.Cir.1990) ("Nothing in any precedent permits judicial redrafting of claims. At most there are admonitions to construe words in claims narrowly, if possible, so as to sustain their validity."). Where, as here, the claim is susceptible to only one reasonable construction, the canons of claim construction cited by HydReclaim are inapposite, and we must construe the claims based on

1. It should be noted that the lack of antecedent basis problem would not be present in those claims specifically reciting "change in weight" (*i.e.*, claims 7-14). Nevertheless, those claims would suffer from the infirmity

the patentee's version of the claim as he himself drafted it. *See Hoganas*, 9 F.3d at 951, 28 USPQ2d at 1939 ("It would not be appropriate for us now to interpret the claim differently just to cure a drafting error.... That would unduly interfere with the function of claims in putting competitors on notice of the scope of the claimed invention.").

E.

[5] Our conclusion that the occurrences of "discharge rate" in clauses [b] and [d] of claim 1 are to be interpreted as referring to the same rate has the following implication for clause [d]. It cannot be disputed that the "material processing rate of the processing machine" is identical to the "discharge rate of the material from the common hopper to the processing machine." The material processing rate of the extruder (the processing machine) is dictated by the rate of the material fed to it, *i.e.*, the discharge rate of the material from the common hopper. As a result of our claim construction, clause [d] does not make "sense" as HydReclaim itself realizes and concedes. What HydReclaim fails to realize is that such a nonsensical result does not require the court to redraft the claims of the '943 patent. Rather, where as here, claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated, thus preventing unduly burdening competitors who must determine the scope of the claimed invention based on an erroneously drafted claim.

II. INVALIDITY

A.

The question that remains is under what theory are the claims of the '943 patent

of using two different phrases, "change in weight" and "discharge rate," to mean the same thing in the same claim if we were to adopt HydReclaim's and the district court's claim construction.

invalid. The district court addressed invalidity of the '943 patent under numerous theories: (1) as vague and indefinite under 35 U.S.C. § 112, ¶ 1, *see Order of September 30, 1997, ¶¶ 53–57*; (2) as on-sale under 35 U.S.C. § 102(b), *see id.* ¶¶ 58–69; (3) as publicly known under 35 U.S.C. § 102(a), *see id.* ¶¶ 70–76; (4) as improperly derived under 35 U.S.C. § 102(f), *see id.* ¶¶ 77–84; (5) as previously invented under 35 U.S.C. § 102(g), *see id.* ¶¶ 85–96; and (6) as obvious under 35 U.S.C. § 103, *see id.* ¶¶ 97–108. The district court held the '943 patent valid in the face of all of these challenges. Process Control only appealed to us the district court's conclusion of nonobviousness.

Nevertheless, Process Control asserts on appeal, in the context of claim construction, that the district court erred in its claim construction because the use of two different definitions for the identical term "discharge rate" creates ambiguity and results in lack of antecedent basis for the second occurrence. For its part, HydReclaim concedes that the claim "makes no sense" if we are to adopt the construction that Process Control urges, which we indeed have done as described above. Process Control responds that this construction presents a question of enablement rather than claim construction. Thus, although the parties discussed whether the properly construed claim "makes no sense" primarily in the context of indefiniteness

2. The district court determined that the claims of the '943 patent were not vague or indefinite under 35 U.S.C. § 112. *See Order of September 30, 1997, ¶¶ 53–57*. We note, however, that definiteness and enablement are analytically distinct requirements, even though both concepts are contained in 35 U.S.C. § 112. The definiteness requirement of 35 U.S.C. § 112, ¶ 2 is a legal requirement, based on the court's role as construer of patent claims, that is reviewed *de novo*. *See, e.g., Personalized Media Communications v. Int'l Trade Comm'n*, 161 F.3d 696, 705, 48 USPQ2d 1880, 1888 (Fed.Cir.1998). Definiteness requires the language of the claim to set forth clearly the domain over which the applicant seeks exclusive rights. *See* 35

and claim construction, we consider their arguments in the district court and in their briefs to us regarding the claims "mak[ing] no sense" as preserving and raising the issues of utility (and operability) under 35 U.S.C. § 101 and enablement under 35 U.S.C. § 112, ¶ 1 on appeal.

B.

[6–10] Lack of enablement and absence of utility are closely related grounds of unpatentability. *See Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 956, 220 USPQ 592, 596 (Fed.Cir.1983). The enablement requirement of 35 U.S.C. § 112, ¶ 1 requires that the specification adequately discloses to one skilled in the relevant art how to make, or in the case of a process, how to carry out, the claimed invention without undue experimentation.² *See Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed.Cir.1997). The utility requirement of 35 U.S.C. § 101 mandates that any patentable invention be useful and, accordingly, the subject matter of the claim must be operable. *See Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1571, 24 USPQ2d 1401, 1412 (Fed.Cir.1992). If a patent claim fails to meet the utility requirement because it is not useful or operative, then it also fails to meet the how-to-use aspect of the enablement requirement.

[11] In *Raytheon*, we held certain process claims invalid, stating

U.S.C. § 112, ¶ 2 ("[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention"). The test for whether a claim meets the definiteness requirement is "whether one skilled in the art would understand the bounds of the claim when read in light of the specification." *Personalized Media*, 161 F.3d at 705, 48 USPQ2d at 1888. However, the problem in the present case is not the clarity of the claim language preventing one skilled in the art from determining the scope of the claim.

[b]ecause it is for the invention as claimed that enablement must clearly exist, and because the impossible cannot be enabled, a claim containing a limitation impossible to meet may be held invalid under § 112. Moreover, when a claim requires a means for accomplishing an unattainable result, the claimed invention must be considered inoperative as claimed and the claim must be held invalid under either § 101 or § 112 of 35 U.S.C.

724 F.2d at 956, 220 USPQ at 596. As the passage illustrates, when an impossible limitation, such as a nonsensical method of operation, is clearly embodied within the claim, the claimed invention must be held invalid. While an otherwise valid patent covering a meritorious invention should not be struck down simply because of the patentee's misconceptions about scientific principles concerning the invention, *see Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1570, 219 USPQ 1137, 1140 (Fed.Cir.1983), when "the claimed subject matter is inoperable, the patent may indeed be invalid for failure to meet the utility requirement of § 101 and the enablement requirement of § 112," *Brooktree Corp.*, 977 F.2d at 1571, 24 USPQ2d at 1412 (citing *Raytheon Co.*, 724 F.2d at 956, 220 USPQ at 596).

C.

[12, 13] Utility is a factual issue, which we review for clear error. *See, e.g., In re Cortright*, 165 F.3d 1353, 1356, 49 USPQ2d 1464, 1465 (Fed.Cir.1999). Whether a disclosure is enabling under 35 U.S.C. § 112, ¶ 1 is a legal conclusion, based upon underlying factual inquiries, and subject to *de novo* review. *See, e.g., Bruning v. Hirose*, 161 F.3d 681, 686, 48 USPQ2d 1934, 1938 (Fed.Cir.1998).

[14] In the present case, it is undisputed by both HydReclaim and Process Control that a consistent definition of "dis-

charge rate" in clauses [b] and [d] of claim 1 leads to a nonsensical conclusion. Due to the principle of conservation of mass, the material processing rate of the processing machine must necessarily be equal to the discharge rate of the material from the common hopper to the processing machine in a steady-state process. Consequently, clause [d] of claim 1, which reads:

[d] determining the material processing rate of the processing machine from the sum of the material discharge rates of the ingredients to the common hopper and the discharge rate of the material from the common hopper to the processing machine

embodies an inoperable method that violates the principle of conservation of mass. In other words, clause [d] requires determining a quantity from the sum of that exact same quantity and something else, or symbolically, $A = A + B$, which is impossible, where, as here, B is not equal to zero. Accordingly, we hold that the correctly construed claims are invalid because they are inoperative, and thus the claims fail to comply with the utility and enablement requirements of 35 U.S.C. §§ 101 and 112, ¶ 1, respectively.

CONCLUSION

Given our conclusion that the claims of the '943 patent are invalid, we vacate the district court's finding of infringement. The issues of willful infringement, damages, nonobviousness, enforceability, and exclusion of witnesses therefore need not be addressed.

COSTS

Each party will bear its own costs.

REVERSED-IN-PART and VACATED-IN-PART



58 CCPA

Application of Gordon Henry COOK and Peter Arnold Merigold.

Patent Appeal No. 8446.

United States Court of Customs and Patent Appeals.

April 8, 1971.

Rehearing Denied July 1, 1971.

Proceeding in matter of application for patent. The Board of Appeals of United States Patent Office, serial No. 309,208, affirmed decision of the primary examiner rejecting as unpatentable certain of the involved claims, and applicant appealed. The United States Court of Customs and Patent Appeals, Rich, J., held that claims 1-27 of application for patent for optical objectives of variable equivalent focal length having two divergent members for zooming purposes were properly rejected when applicants failed to establish support for range limitations in claims when reasonably challenged to do so by the examiner.

Affirmed.

1. Patents \Rightarrow 101(5)

Disclosure in application seeking patent for optical objectives of variable equivalent focal length having two divergent members for zooming purposes was not insufficient on ground that it would require many months for skilled lens designer, working with aid of computer, to design, within ambit of claims, a satisfactory zoom lens assembly other than the six specifically disclosed where disclosure was sufficient to teach those skilled in the art how to design a new zoom lens of the type claimed without undue effort, notwithstanding that disclosure did not teach those skilled in the art how to design entire new zoom lens in short order. 35 U.S.C.A. § 112.

2. Patents \Rightarrow 104

When primary examiner sets forth reasonable grounds in support of conclusion that applicant's claim may read on inoperative subject matter, it becomes incumbent on applicant either to reason-

ably limit his claims to the approximate area where operativeness had not been challenged or to rebut the examiner's challenge either by submission of representative evidence or by persuasive arguments based on known laws of physics and chemistry. 35 U.S.C.A. § 112.

3. Patents \Rightarrow 101(5)

Claims 1-27 in application for patent for optical objectives of variable equivalent focal length having two divergent members for zooming purposes were not too broad, to point of invalidity, because they read on a large number of inoperative embodiments where it was conceded that a person skilled in the relevant art could determine which conceived but not-yet-fabricated embodiments would be inoperative with expenditure of no more effort than was normally required of a lens designer checking out a proposed set of parameters. 35 U.S.C.A. § 112.

4. Patents \Rightarrow 104

Claims 1-27 of application for patent for optical objectives of variable equivalent focal length having two divergent members for zooming purposes were properly rejected when applicants failed to establish support for range limitations in claims when reasonably challenged to do so by the examiner. 35 U.S.C.A. § 112.

Holcombe, Wetherill & Brisebois, Washington, D. C., attorneys of record, for appellant. Joseph F. Brisebois, John A. Feketis, Washington, D. C., of counsel.

S. Wm. Cochran, Washington, D. C., for the Commissioner of Patents. R. V. Lupo, Washington, D. C., of counsel.

RICH, Judge.

This appeal is from the decision of the Patent Office Board of Appeals affirming the examiner's rejection of claims 1-27 in appellants' application serial No. 309,208, filed September 16, 1963, for "Optical Objectives of Variable Equivalent Focal Length Having Two Divergent

Members For Zooming Purposes." We affirm.

THE INVENTION

The rejected claims are for an allegedly improved version of a particular kind of "optical objective of the 'zoom' type." In common parlance, an optical objective is called a lens. A "zoom" lens assembly is one in which the focal length, and consequently the image size as seen from a fixed position, can be varied continuously by movement of certain lens elements to vary the scale of the image without loss of focus. The zoom lenses involved here have four optical members, the outer one of which is axially movable for focusing purposes but stationary during zooming, the middle two of which are axially movable to produce the zooming effect, and the innermost one of which is stationary. Such lens assemblies are extremely complex from the optical design standpoint; the six examples set forth in appellants' specification are each characterized by over one hundred related parameters. The rejected claims recite certain relationships among a relatively small number of these parameters, the stated purpose of which is to extend the range over which the scale of the image provided by the lens assembly, i. e., the equivalent focal length, can be varied without experiencing an unacceptable high degree of image distortion at any point in the range.¹

Claim 1 is illustrative (subparagraphing and emphasis supplied):

1. An optical objective of the zoom type (that is of the type having relatively movable members whereby the equivalent focal length of the objective can be continuously varied throughout a range, whilst maintaining constant

1. According to appellants' brief, "designers have been heretofore unable to design a lens having both adequate correctional properties and a zooming range in excess of about six times its minimum focal length." Appellants' examples, the operativeness of which has not been challenged, are of lens assemblies in which the zooming range is ten to one. There is no evidence in the record to support

position of the image plane), corrected for spherical and chromatic aberrations, coma, astigmatism, field curvature and distortion, and

comprising

a convergent first member which for a given object distance remains stationary during the zooming relative movements,

an axially movable divergent second member behind the first member having equivalent focal length f_B lying numerically between 4 and 8 times the minimum value of the ratio of the equivalent focal length of the complete objective to the f-number of the objective in the range of variation,

an axially movable divergent third member behind the second member having equivalent focal length f_C lying numerically between 5 and 10 times the minimum value of such ratio,

a stationary convergent fourth member behind the third member,

a zoom control element, and

means whereby operation of the zoom control element causes the zooming relative movements to be effected,

wherein

the total axial movement of the second member in the range of variation lies numerically between $1.5f_B$ and $2.5f_B$ and

the total axial movement of the third member in the range lies numerically between $0.25f_C$ and $0.5f_C$,

the assertion that a range of over six to one has not heretofore been possible, but whether or not it is true is unimportant. No prior art being relied on, appellants had no need of recourse to objective indicia of nonobviousness. Whether or not their application teaches how to make a better zoom lens is irrelevant to the issue before us.

the minimum axial separation between the second and third members occurring when the equivalent focal length of the objective is greater than half its maximum value in the range of variation,

the movable divergent second member consisting of a divergent simple meniscus component with its surfaces convex to the front and a divergent compound component behind such simple component, and

the movable divergent third member consisting of a doublet component having its front surface concave to the front with radius of curvature lying numerically between $0.5f_C$ and $1.0f_C$.

THE REJECTION

There is no rejection on prior art. The examiner rejected all of appellants' claims under both the first and second paragraphs of 35 U.S.C. § 112. The board affirmed both rejections. However, at oral argument the solicitor for the Patent Office, noting that the rejections on the second paragraph of § 112 were "prior to the court's decisions in *Robins* [In re Robins, 57 CCPA 1321, 429 F.2d 452, 166 USPQ 552 (1970)] and predecessor cases [presumably, In re Borkowski, 57 CCPA 946, 422 F.2d 904, 164 USPQ 642 (1970), In re Halleck, 57 CCPA 954, 422 F.2d 911, 164 USPQ 647 (1970), and In re Wakefield, 57 CCPA 959, 422 F.2d 897, 164 USPQ 636 (1970)]," stated that "Today we may consider the Office's position * * * under paragraph one completely." In view of this statement, we reverse the rejection under the second paragraph of 35 U.S.C. § 112 on the basis of the above-cited cases.

Two distinct rationales are apparent in the rejection below under the first paragraph of § 112. First, appellants' disclosure was said to be insufficient because it would require many months for a skilled lens designer, working with the aid of a computer, to design, within the ambit of the claims, a satisfactory zoom lens assembly other than the six specifi-

cally disclosed. Second, appellants' disclosure was said not to support their claims because their six examples are not representative of the ranges recited in the claims and, when challenged, appellants did not give a satisfactory explanation of the origin of the range limitations in the claims. We will discuss these two rationales in turn.

OPINION

A. *Difficulty of Designing an Operative Embodiment*

It seems to have been agreed by all concerned that the design of commercially satisfactory zoom lenses of the kind involved here (i. e., four-member zoom lenses) is an extremely complex and time-consuming operation, even with the aid of modern computer techniques. Thus, quite apart from appellants' teachings, it would take a lens designer setting out to design a new zoom lens of this type many months, or even years, to come up with a marketable lens assembly possessing all the desired characteristics.

[1] Appellants do not purport to have solved all of the time-consuming problems involved in the design of a new lens; indeed, to the extent that their relationships add new calculations to the design of zoom lenses, they may even have increased the time required. What they do claim to have done is to have discovered a simple set of relationships among some of the fundamental parameters involved in the design of zoom lenses which, if respected, will result in zoom lens assemblies which will be capable of zooming through a wider range than previous zoom lenses without experiencing an unacceptably high degree of image distortion at any point in their ranges of equivalent focal length variation. They are thus, it seems to us, somewhat in the position of a suspension-bridge builder who has discovered that maintaining certain relationships between the height above the roadway of the main piers and the distance between the piers will result in bridges of substantially increased strength. Disclosure

Cite as 439 F.2d 730 (1971)

by the bridge builder of this relationship would certainly not solve all the time-consuming problems of bridge designing or building, but it would, we think, enable any person skilled in the art to practice the invention. Similarly, we feel that, while appellants' disclosure has not taught those skilled in the art how to design an entire new zoom lens in short order, it *has* taught those skilled in the art how to design a new zoom lens *of the type here claimed* without undue effort. The rejection therefore cannot be sustained on this rationale.

B. Support for the Range Limitations in the Claims

The second problem, however, is more difficult. Appellants disclose six specific examples of lens assemblies embodying their invention, but they have claimed their invention in terms of broad ranges within which various parameters shall fall, which include but also go far beyond the specific examples. The examiner challenged the breadth of appellants' ranges, asking, "How could there be any lens design significance for all the values that can be chosen within the various broad ranges?" and demanding "Additional explanation * * * to explain the breadth of the ranges." As far as we can determine from the abbreviated record in this case, appellants never provided such "Additional explanation,"² contenting themselves with unsupported assertions, as quoted in the final action, that the range limitations

* * * "cooperate with one another to form a complete combination, such that sufficiently good results are achieved, for all values within the specified ranges of variation for individual parameters, to produce the desired improvement over known objectives, provided of course that the de-

2. The closest they seem to have come to explaining the origin of the ranges in their application is the statement, contained in their Request for Reconsideration of the board's decision, that

Appellant[s?] has [have?] in his [their?] possession a stack of paper

signer makes appropriate use where necessary of the store of common general knowledge which all experts have."

On that record, the board affirmed the examiner's rejection "for substantially the reasons stated by the Examiner," but made an additional point by noting that

We consider the reasons which prompt the denial of broad claims to a chemical compound or a chemical process that is based on a single disclosed example are more than applicable here since few chemical processes or compounds involve as many parameters or as a high degree [as high a degree?] of precision as are evidenced in the case of the design of a complex lens and the predictability of securing the wanted results are much less than would be present in most chemical reactions.

Appellants rely on this court's decision in *In re Vickers*, 141 F.2d 522, 31 CCPA 985 (1944), reversing the rejection of claims in a mechanical case reading on oil well pumping apparatus in which two valves were actuated by a single piston although appellants' specification disclosed actuation of the two valves by different pistons. The examiner had stated that "it * * * [was] not immediately clear" to him how both valves could be actuated by a single piston and that "applicants * * * [had] not shown how to do it." The board affirmed, stating (as paraphrased in the opinion of this court) that "an entirely different and unobvious construction from that shown in appellants' drawings and specification would be necessary in order to control the valves by a single piston." This court stated that it was "unable to concur in the view of the solicitor that appellants' specification does not suggest that * * * [both valves] could be op-

three feet thick covered with calculations which resulted in the definition of the ranges set forth in the specification.

erated by a single piston." The court found that "it is plainly suggested in appellants' specification that the accumulator piston alone may operate the valves for the purposes set forth in the appealed claims" and apparently accepted the explanation offered by counsel for appellants in their brief of the "obvious" manner in which this result could be achieved.

However, the opinion in *Vickers* does not stop there. It continues, noting but not answering "the question raised by counsel for appellants as to whether the tribunals of the Patent Office have authority to reject a broad claim merely because it may cover one or more inoperative species," but concluding that, even if they had such authority, the burden was on the Patent Office "to show that such a claim covers an inoperative species, and not upon the applicant to show that it does not." Clearly, since it had already held the single-piston valve-actuating structure an obvious variation of the disclosed two-piston valve-actuating structure, the court was of the view that the Patent Office had not carried this burden. Accordingly, it held that appellants had supported their broad claims by their disclosure of a single form of the claimed apparatus.

Vickers is cited in the Manual of Patent Examining Procedure, § 706.03(Z), for the proposition that "In mechanical cases, broad claims may properly be supported by a single form of an apparatus or structure." This statement is then contrasted with the rule "In chemical cases" that "the disclosure of a single species usually does not provide an adequate basis to support generic claims

3. See also Goodman, "The Invalidation of Generic Claims by Inclusion of a Small Number of Inoperative Species," 40 JPOS 745 (1958), and Einhorn, "The Enforceability of Patent Claims Encompassing Some Inoperative Species," 45 JPOS 716 (1963). It should be noted that both Goodman and Einhorn focus on claims litigated in infringement actions, where equitable considerations may be present which are not present during the prosecution of patent applications, since an applicant is still in a position to

* * * because in chemistry it is not obvious from the disclosure of one species, what other species will work." This dichotomy, which we would prefer to see denominated a dichotomy between predictable and unpredictable factors in any art rather than between "mechanical cases" and "chemical cases," has been at the heart of much of the argument here, appellants contending that they are entitled to their broad claims by virtue of a single operative example because this is a "mechanical case" while the solicitor contends that appellants are entitled only to claims reading on their disclosed embodiments and obviously operative variations thereof.

[2] Preliminarily, it should be said that we regard the "question raised by counsel" and left open by this court in the *Vickers* case, as to the authority of the Patent Office to reject broad claims merely because they read on one or more inoperative species, as having been answered generally in the affirmative by subsequent cases. In 1949 the Supreme Court held that claims may be too broad "to the point of invalidity" by reason of reading on significant numbers of inoperative embodiments. *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 336 U.S. 271, 276-277, 69 S.Ct. 535, 93 L.Ed. 672 (1949) (claims reading on all "silicates" or all "metallic silicates" when only nine metallic silicates "had been proved operative").³ We see no reason why the Patent Office as well as the courts deciding infringement litigation should not "have authority to reject a broad claim merely because it * * * [reads on a significant number of] inoperative species."⁴

amend his claims to exclude inoperative subject matter. Cf. *In re Prater*, 415 F.2d 1393, 1404-1405, 56 CCPA 1381, 1396 (1969), and *In re Harwood*, 390 F.2d 985, 989, 55 CCPA 922, 926-927 (1968).

4. While we have held that "the mere possibility of inclusion of inoperative * * * [subject matter] does not prevent allowance of broad claims," *In re Saret*, 327 F.2d 1005, 1019, 51 CCPA 1180, 1199 (1964), when the examiner

However, many patented claims read on vast numbers of inoperative embodiments in the trivial sense that they can and do omit "factors which must be presumed to be within the level of ordinary skill in the art," *In re Skrivan*, 427 F.2d 801, 806, 57 CCPA 1201 (1970), and therefore read on embodiments in which such factors *may* be included in such a manner as to make the embodiments inoperative. There is nothing wrong with this so long as it would be obvious to one of ordinary skill in the relevant art how to include those factors in such manner as to make the embodiment operative rather than inoperative. *Ibid.* See also *Goodman*, op. cit. note 3 at 748, and *Einhorn*, op. cit. note 3 at 719.

In this case appellants do not contend that every four-member lens assembly in which the specified parameters and parametric relationships are kept within the recited ranges will be "useful" as a zoom lens in the sense of 35 U.S.C. § 101, nor that the specification teaches "how to use" those lens assemblies within the claims which are not "useful" as zoom lenses.⁵ What appellants contend is that certain of such four-member lens assemblies will be useful as zoom lenses (indeed, that they will be superior in at least one sense to prior-art zoom lenses) and that it would be obvious to those skilled in lens design whether a given embodiment within the indicated ranges, once conceived, would or would not be useful as a zoom lens. Compare *In re Fisher*, 427 F.2d 833, 839, 57 CCPA 1099 (1970). The word "obvious" as here used means that those skilled in the art would know how to determine utility without having to build and try out the

sets forth reasonable grounds in support of his conclusion that an applicant's claims may read on inoperative subject matter (other than subject matter inoperative only in the sense of *In re Skrivan*, discussed *infra*), it becomes incumbent upon the applicant either to reasonably limit his claims to the approximate area where operativeness has not been challenged or to rebut the examiner's challenge either by the submission of representative evidence, *In re Harwood*, *supra*, 390 F.2d at 989, 55 CCPA

conceived embodiment and could do so without the expenditure of unreasonable effort. Cf. *In re Vickers*, *supra* (operability of single-piston device "obvious" from theoretical considerations unsupported—but unrebutted—by actual construction). Of course, given the complexities of zoom lens design, the determination, while routine, could be very time-consuming.

[3] As far as appellants' arguments go, they are persuasive. We agree that appellants' claims are not too broad "to the point of invalidity" just because they read on even a very large number of inoperative embodiments, since it seems to be conceded that a person skilled in the relevant art could determine which conceived but not-yet-fabricated embodiments would be inoperative with expenditure of no more effort than is normally required of a lens designer checking out a proposed set of parameters. In that sense, our reasoning here is similar to that which led us to reject the board's first rationale for its rejection under the first paragraph of § 112.

[4] However, appellants' arguments do not reach the heart of the board's second rationale, which, as we understand it, is that appellants, having been challenged to do so by the examiner, failed to demonstrate that the ranges of parameters and parametric relationships recited in the claims reasonably bound the area within which satisfactory zoom lenses could be produced by ordinary design skill. The examiner in effect, and reasonably in our estimation, challenged appellants to prove that there were embodiments to be found, not only near the six

at 926, or by persuasive arguments based on known laws of physics and chemistry, *In re Chilowsky*, 229 F.2d 457, 462, 43 CCPA 775, 782 (1956), and *In re Vickers*, *supra*.

5. See Janicke, *Patent Disclosure—Some Problems and Current Developments, Part II, "Undue Breadth as a Disclosure Problem,"* 52 JPOS 757 (1970), concerning the relationship between lack of § 101 utility and failure of the specification to teach "how to use" as required by § 112.

specifically disclosed examples, but at various points throughout the broader claimed ranges, which would be operative. Appellants asserted that they had made "calculations which resulted in the definition of the ranges set forth in the specification," but they never produced those calculations to substantiate the truthfulness of the teaching in their specification which the examiner challenged. Section 112 requires not that the

specifications merely say how to use the claimed invention, but that such teaching be true, i. e., in fact enabling. Appellants having failed to establish the truthfulness of their assertions about the validity of their ranges when reasonably challenged to do so by the examiner, we hold that the Patent Office properly rejected the appealed claims. The decision of the board is affirmed.

Affirmed.

Cite as 399 F.2d 269 (1968)

[5] Our review of the record with due regard for appellant's arguments satisfies us that the board did not commit the reversible error of which Fang complains. We would simply add that it is well established that, when there is a reasonable doubt as to whether there has been an actual reduction to practice, the inventor's subsequent conduct may demonstrate that the acts relied on as an actual reduction to practice amount only to an abandoned experiment. *Conner v. Joris*, supra.

Here Fang's application in interference, filed after Hankins' patent issued, contained not only the claims of that patent but also every working example of that patent nearly verbatim. Curiously, Fang did not include in his application examples relating to the subject matter of Exhibits 36, 38 and 40. Fang also testified that, before he would make a suggestion that subject matter be patented, "I have to remain convinced that an idea is a worthwhile suggestion before I make such a proposal." At best, the earliest suggestion to patent the present subject matter was made after Hankins' filing date. That is at least some indication, we think, that Fang did not regard the present subject matter "worthwhile" until that time, and that he did not have a conviction of success based on the evidence of record, particularly Exhibits 36, 38 and 40. There is, in our view, reasonable doubt that Fang reduced the subject matter of the counts to practice before Hankins' filing date.

[6] One matter remains. Hankins has added certain material to the record. We regard approximately a third of that material to be properly part of the record and have considered it in reaching our decision, while the remaining material was unnecessary. Accordingly, one-third of the printing costs is assessed against appellant, and two-thirds against appellees.

The decision is affirmed.

Affirmed.

KIRKPATRICK, Judge, took no part in the decision of this case.

55 CCPA

Application of Herman HOEKSEMA.

Patent Appeal No. 7778.

United States Court of Customs
and Patent Appeals.

Aug. 8, 1968.

Proceeding on appeal from a decision of the Patent Office Board of Appeals affirming examiner's rejection of remaining claim of application for a patent on a chemical compound, Serial No. 30,770. The United States Court of Customs and Patent Appeals, 379 F.2d 1007, affirmed. On rehearing, Smith, J., held that application on the chemical compound and a method for the making thereof was patentable over the prior art.

Reversed.

Kirkpatrick, J., dissented.

1. Patents ☞16.25

An invention as a whole, for patentability purposes, must be considered as the claimed compound and a way to produce it.

2. Patents ☞66(1.12)

A compound would be considered patentable over the prior art even if the prior art disclosed the claimed compound, where the prior art did not disclose a way to produce it.

3. Patents ☞18

If the prior art of record fails to disclose or render obvious a method for making a claimed compound, at time invention was made, it may not be legally concluded that the compound itself is in possession of the public.

4. Patents ☞32

Absence of a known or obvious process for making claimed compounds overcomes a presumption that the compounds are obvious, based on close relationships between their structures and those of prior art compounds.

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5. Patents ~~66(1.12)~~

Affidavit pointing out that reference relied on as precluding patentability did not disclose a process for producing different compounds claimed was sufficient to overcome cited reference as a patent-defeating reference.

6. Patents ~~66(1.12)~~

Application on a chemical compound and a method for the making thereof was patentable over the prior art.

Earl C. Spaeth, Kalamazoo, Mich., (Eugene O. Retter, George T. Johansen, Kalamazoo, Mich., of counsel), for appellant.

Joseph Schimmel, Washington, D. C., (Jack E. Armore, Washington, D. C., of counsel), for Commissioner of Patents.

Before WORLEY, Chief Judge, and RICH, SMITH, ALMOND and KIRKPATRICK *, Judges.

SMITH, Judge.

In our prior consideration of this appeal, we affirmed the decision of the Patent Office Board of Appeals, which had affirmed the examiner's rejection of the sole remaining claim of appellant's application.¹ In re Hoeksema, 379 F.2d 1007, 54 CCPA 1618 (1967). Because of the continuing importance of the questions involved, and the strong suggestion of error in our earlier opinion, we granted appellant's petition for a rehearing under the provisions of Rule 7 of this court, 55 CCPA —, (October 5, 1967).

The parties filed new briefs, and the case was reargued on January 3, 1968. Upon reconsideration of our previous decision, we have concluded that our previous decision was erroneous and that a proper resolution of the issues requires that we reverse the decision of the board.

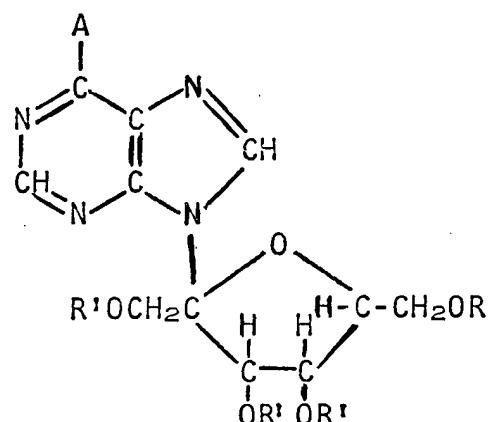
* Senior District Judge, Eastern District of Pennsylvania, sitting by designation.

¹. Claim 1 in Serial No. 30,770, filed May 23, 1960, for "9-D-Psicofuranosylpurine

The facts are set forth in our original opinion. We shall assume familiarity with that statement of facts and shall here redevelop only those which we now believe were previously misapprehended or misapplied and require the present decision.

The sole claim on appeal is directed to a chemical compound and reads as follows:

1. An N-psicofuranoside having the formula:



wherein A is selected from the class consisting of hydrogen, the group-XR wherein R is selected from the class consisting of hydrogen, lower-alkyl, and lower-aralkyl, and X is selected from the class consisting of oxygen

and sulfur, and the group $-N < \frac{R_2}{R_3}$

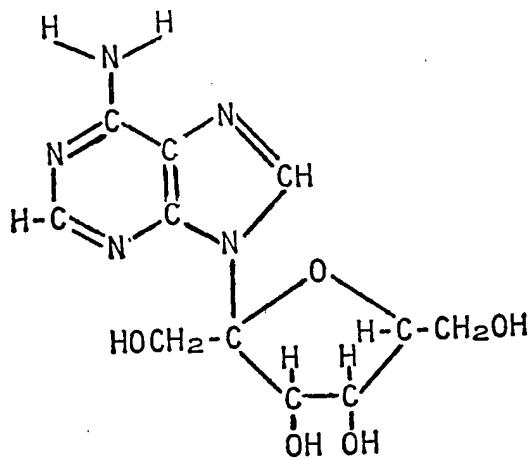
wherein R_2 is selected from the class consisting of hydrogen, lower-alkyl, lower-aralkyl, and lower-aryl, and R_3 is selected from the class consisting of lower-alkyl, lower-aralkyl, and lower-aryl, and R' is selected from the class consisting of hydrogen, a hydrocarbon carboxylic acid acyl radical containing from two to twelve carbon atoms, inclusive, and a halo-, hydroxy-, lower-alkoxy-, amino-, cyano-, thiocyanato-, and nitro-substituted hydrocarbon carboxylic acid acyl

and 6-Substituted Derivatives." Claims 2 and 11-25 stand allowed.

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radical containing from two to twelve carbon atoms, inclusive.

That claim stands rejected under 35 U.S.C. § 103 as unpatentable over prior art, on this record limited solely to the De Boer et al. patent² (De Boer) which discloses a compound with the structural formula:



As we noted in our original opinion, the controversy here is limited to the substituent A at the 6-position of the purine ring system. Although a compound having De Boer's structure is not included in the appealed claim since A in the

claim cannot be an unsubstituted or primary amino, —N ^H —H, the basic structure of the De Boer compound is similar to the structure of appellant's alkylamino and dialkylamino compounds.³

Despite this close structural similarity between the De Boer amino compound and the alkylamino and dialkylamino compounds included in the appealed claim, appellant chose not to submit a showing of unexpected properties in his claimed compounds.⁴ Appellant asserted that his compounds were unobvious and patentable without such a showing. He urged that De Boer does not teach one of ordinary skill in the art how to make appellant's claimed compounds, and the examiner did not cite any other reference telling how they might be made. Therefore, in appellant's view, his claimed compounds are not in possession of the public, *In re Brown*, 329 F.2d 1006, 51 CCPA 1254 (1964).⁵

In support of his position, appellant submitted an affidavit by Dr. Paul F. Wiley relating to the unavailability to the public of processes for preparing appellant's alkylamino and dialkylamino compounds.⁶ Dr. Wiley's qualifications

Dix-Seal Corp. v. New Haven Trap Rock Co., 236 F.Supp. 914, 921 (D.C.Conn. 1964).

6. After setting forth his qualifications and stating that he had read and understood both appellant's application and the prior art patent, Dr. Wiley stated:

THAT, 6-amino-9-D-psicofuranosylpurine is a systematic name for "psicofuranine" which is disclosed in column 6, lines 46-62 of the aforesaid patent;

THAT, according to the aforesaid patent, 6-amino-9-D-psicofuranosylpurine is produced by a fermentation process involving the action of a specific microorganism, *S. hygroscopicus* var. decoyinine, in certain aqueous nutrient media;

THAT, there is no indication in the aforesaid patent [De Boer] that the aforesaid fermentation process could be used to produce 6-lower-alkylamino - 9 - D - psicofuranosylpurines,

2. Patent No. 3,094,460, issued June 18, 1963 on an application filed January 20, 1959.

3. Appellant, in effect, admits that there is such a "structural similarity" between his claimed compounds and the prior art compounds as to raise an "inference of fact" that they are not patentable within the meaning of 35 U.S.C. § 103. See *In re Papesch*, 315 F.2d 381, 50 CCPA 1084 (1963); *In re Mills*, 281 F.2d 218, 47 CCPA 1185 (1960).

4. Such a showing often has been treated by this court as overcoming a case of "prima facie obviousness" or the "inference of fact" that the compounds are obvious. See, e. g., *In re Papesch*, supra note 3 and cases cited therein.

5. For the applicability of *In re Brown*, supra, to other factual contexts, see *In re Bird*, 344 F.2d 979, 982, 52 CCPA 1290, 1294 (1965); *In re Sheppard*, 339 F.2d 238, 242, 52 CCPA 859, 864 (1964);

and competence as an expert to state facts and opinion in this area of chemistry were not challenged.

Regarding the Wiley affidavit, the examiner stated, in his Answer:

The affidavit * * * does not appear to be pertinent to the claim now on appeal because it is directed to the processes by which the De Boer et al. and appellant's compounds are prepared, and shows nothing unobvious for the instantly claimed compound.

Concerning the Wiley affidavit, the board cited a statement of this court in *In re Riden*, 318 F.2d 761, 50 CCPA 1411 (1963), to the effect that "the method of making the compounds is a relevant fact to be considered in the question of obviousness of the compounds," 318 F.2d at 764, 50 CCPA at 1415. But the board continued:

* * * This may be so but it is only one factor and, in our opinion, should never be the overriding one which appellant is here, in effect, urging.

Appellant states the first of two central questions to be decided in this rehearing as follows:

1) Appellant will admit his compounds are obvious and unpatentable if an obvious process is available to make them. Does it follow then that appellant's compounds are unobvious

6 - di - lower - alkylamino - 9 - D - psicofuranosylpurines, or other 6-substituted - amino - 9 - D - psicofuranosylpurines;

THAT, he does not believe the aforesaid fermentation process could be adapted to the production of the aforesaid 6-lower-alkylamino-9-D-psicofuranosylpurines, 6-di-lower-alkylamino-9-D-psicofuranosylpurines, or other 6-substituted - amino - 9 - D - psicofuranosylpurines;

THAT, the aforesaid 6-amino-9-psicofuranosylpurine could not be transformed by direct chemical substitution of the 6-amino group to a 6-lower-alkylamino 9 - D - psicofuranosylpurine, a 6-di-lower alkylamino-9-D-psicofuranosylpurine, or other 6-substituted - amino - 9 - D - psicofuranosylpurines, and that such trans-

and patentable if an obvious process is not available to make them?

Within this context, appellant simplifies that question to: Is process obviousness relevant in deciding compound obviousness? ⁷

The solicitor responds to the latter characterization of the question in the affirmative, pointing out that the first question bears on the principle implicit in *In re Brown*, supra, that claimed compounds not distinguished in their properties over closely related prior art compounds are unpatentable thereover where the claimed compounds would be "in possession of the public" in that a process for preparing them would be obvious to those of ordinary skill in the art.

In addition, the solicitor now refers to our prior opinion in which we noted that the facts in this case are closely analogous to those of *In re Riden*, supra, where we stated that the fact that the method of making the claimed compound is relevant, 379 F.2d at 1010, 54 CCPA at —.

A recurring problem of analysis which confronted us as we prepared our previous opinion, and which still confronts us after the rehearing, has its genesis in a proper understanding of the issue as framed by appellant. In effect, appellant agrees that since the claimed prod-

formations could be carried out only by a complex multi-step procedure such as that described in the aforesaid patent application Serial No. 30,770. [Emphasis added.]

7. To this extent, appellant has misstated his argument. That process obviousness is relevant in this context is clear from *In re Riden*, supra. See also *In re Chapman*, 357 F.2d 418, 53 CCPA 978 (1966); *In re Burt*, 356 F.2d 115, 53 CCPA 929 (1966); *In re Schechter*, 205 F.2d 185, 40 CCPA 1009 (1963).

We think appellant really means to say that the question is whether a claimed compound may be said to be legally obvious when no process for making that compound is shown in the prior art relied upon to establish legal obviousness under section 103.

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uct is a homolog of a known compound, it would be *prima facie* "obvious" under 35 U.S.C. § 103. But this agreement is conditioned on the proviso that there is in the prior art an "obvious" process by which to make that compound.

In the context of section 103, we are not permitted to fragment a claimed invention in applying that section. The clear mandate of the statute which governs our analysis requires that we consider the *invention as a whole* in making the determination.

Thus, as we apply the statute to the present invention, we must ask first, what is the invention as a whole? Necessarily, by elementary patent law principles, it is the claimed compound, but, so considered, unless there is some known or obvious way to make the compound, the invention is nothing more than a mental concept expressed in chemical terms and formulae on a paper.

[1] We are certain, however, that the invention as a whole is the claimed compound *and* a way to produce it, wherefore appellant's argument has substance. There has been no showing by the Patent Office in this record that the claimed compound can exist because there is no showing of a known or obvious way to manufacture it; hence, it seems to us that the "invention as a whole," which section 103 demands that we consider, is not obvious from the prior art of record.

[2] While there are valid reasons based in public policy as to why this defect in the prior art precludes a finding of obviousness under section 103, In re Brown, *supra*, its immediate significance in the present inquiry is that it poses yet *another difference* between the claimed invention and the prior art which *must* be considered in the context of section 103. So considered, we think the differences between appellant's *invention as a whole* and the prior art are such that the claimed invention would not be obvious within the contemplation of 35 U.S.C. § 103.

While 35 U.S.C. § 102 is not *directly* involved in the issue on review, the conditions for patentability, novelty and loss of right to patent, there stated, may have relevance as to the disclosure which must be found in the prior art to find obviousness of an invention under section 103. In determining that quantum of prior art disclosure which is necessary to declare an applicant's invention "not novel" or "anticipated" within section 102, the stated test is whether a reference contains an "enabling disclosure," in the present context, a process by which the claimed compound could be made. In *In re Le Grice*, 301 F.2d 929, 49 CCPA 1124 (1962), we observed that the resolution of this issue required us to determine whether, *as a matter of law*, a reference without such a disclosure constituted a statutory time bar to an applicant's right to a patent. There, the issue was founded on 35 U.S.C. § 102(b), not § 103, but our conclusions have a certain pertinence here. We concluded, *id.* 301 F.2d at 936, 49 CCPA at 1134:

We think it is sound law, consistent with the public policy underlying our patent law, that before any publication can amount to a statutory bar to the grant of a patent, its disclosure must be such that a skilled artisan could take its teachings in *combination with his own knowledge of the particular art and be in possession of the invention*. * * *

In *In re Brown*, *supra*, this court discussed *In re Von Bramer*, 127 F.2d 149, 29 CCPA 1018 (1942), commenting that that opinion should not be construed to encompass what had come to be called the "Von Bramer doctrine." There we stated, 329 F.2d at 1009, 51 CCPA at 1257:

* * * This doctrine, which appears to have resulted from *In re Von Bramer et al.*, *supra*, seems over a period of years to have been tailored in some quarters to a principle which defeats the novelty of a chemical compound on the basis of a mere printed conception or a mere printed contemplation of a

chemical "compound" irrespective of the fact that the so-called "compound" described in the reference is not in existence or that there is no process shown in the reference for preparing the compound, or that there is no process known to a person having ordinary skill in the relevant art for preparing the compound. In other words a mere formula or a mere sequence of letters which constitute the designation of a "compound," is considered adequate to show that a compound in an application before the Patent Office, which compound is designated by the same formula or the same sequence of letters, is old. We do not think that the *Von Bramer* case should be so construed. [Emphasis added.]

* * * * *

To the extent that anyone may draw an inference from the *Von Bramer* case that the *mere* printed conception or the *mere* printed contemplation which constitutes the designation of a "compound" is sufficient to show that such a compound is old, regardless of whether the compound is involved in a 35 U.S.C. § 102 or 35 U.S.C. § 103 rejection, we totally disagree. * * * [Footnotes omitted.]

We concluded, relying on *In re Le Grice*, supra, and *E. I. DuPont de Nemours & Co. v. Ladd*, 117 U.S.App.D.C. 246, 328 F.2d 547 (1964), that the "true test of any prior art relied on to show or suggest that a chemical compound is old, is whether the prior art is such as to place the disclosed 'compound' in the possession of the public." 329 F.2d at 1011, 51 CCPA at 1259.

8. In *Phillips Petroleum Co. v. Ladd*, 219 F.Supp. 366 (D.D.C.1963), in considering a rejection arising under 35 U.S.C. § 102, the District Court agreed with this court that the mere naked statement of the invention does not put anyone in possession of the invention. That court was careful to note that no process had been shown in the reference for preparing the compound and that no process was known to one of ordinary skill in the art for preparing the compound.

While *In re Le Grice* was bottomed on an issue arising under 35 U.S.C. § 102 where the reference was a "printed publication," that test, in our view, is also properly applicable to issues arising under 35 U.S.C. § 103. See *In re Brown*, supra (pertinent portion quoted above); *Deutsche Gold-Und Silber-Scheideanstalt v. Commissioner of Patents*, 251 F.Supp. 624, 629-630 (D.D.C.1966), affirmed, 397 F.2d 656 (D.C.Cir. 1968).

[3, 4] Thus, upon careful reconsideration it is our view that if the prior art of record fails to disclose or render obvious a method for making a claimed compound, at the time the invention was made, it may not be legally concluded that the compound itself is in the possession of the public.⁸ In this context, we say that the absence of a known or obvious process for making the claimed compounds overcomes a presumption that the compounds are obvious, based on close relationships between their structures and those of prior art compounds.

The second aspect of the questions presented by this rehearing involves the issue of whether the burden is on the Patent Office to provide the evidence on which to predicate process obviousness.

35 U.S.C. § 101 states, in its preamble, that an applicant is *entitled* to a patent *unless* certain patent-defeating provisions are met. The substantive patent-defeating provisions are encompassed in 35 U.S.C. §§ 100-103.

As we have stated, the Patent Office search resulted in citation of the De Boer reference which, under the prevailing law, rendered appellant's claimed compounds *prima facie* obvious. In oth-

In *Ex parte Wall*, 156 USPQ 95 (P.O. Bd.App.1964), the board considered a rejection under 35 U.S.C. § 102 of a claim reading "Perfluorostyrene." In reversing the examiner, the board commented that the examiner did not contend that the reference disclosed how perfluorostyrene is made, nor did he point to any extraneous evidence which would indicate that those skilled in the art knew how to make that compound.

Cite as 399 F.2d 275 (1968).

er words, its citation shifted to appellant the burden of going forward with contrary evidence. Appellant filed the affidavit of Dr. Wiley which points out as a fact that De Boer—the only reference being relied on—does not disclose a process for producing the different compounds here claimed.

[5] We think that portion of the Wiley affidavit set forth, *supra* note 6, states facts which were legally sufficient to overcome the position of the Patent Office as to the legal effect under section 103 of the De Boer reference.⁹ Appellant's responsibility to overcome this reference as a "patent-defeating" reference under section 103 at that point in the prosecution was only to overcome De Boer as a reference pertinent to the issue of obviousness under section 103.

We think the Wiley affidavit is clearly sufficient for this purpose. The affidavit points out that there is no indication in the De Boer patent that the fermentation process used to produce De Boer's compounds could be used to produce appellant's compounds. Since we are of the view that the method for making the compounds is an integral part of the "invention as a whole" which we must consider under section 103, we conclude that the burden of going forward with proofs to support its position as to obviousness of the claimed invention shifted to the Patent Office upon appellant's filing of the Wiley affidavit.

[6] The failure of the Patent Office to produce such evidence requires that the decision of the board be reversed.

Reversed.

WORLEY, C. J., did not participate.

KIRKPATRICK, Judge (dissenting).

I am unable to agree with the result reached by the majority. The reasons

9. We think this approach to be eminently fair to all parties and in accord with the opinion of the Supreme Court in *Graham*, in its requiring that all of the pertinent evidence be considered while yet leaving the primary responsibility for sifting out unpatentable material with the Patent

for my dissent appear in the overruled opinion In re Hoeksema, 379 F.2d 1007, 54 CCPA 1618 (1967)..



65 CCPA

Application of Alfred AUFHAUSER.
Patent Appeal No. 7934.

United States Court of Customs
and Patent Appeals.

July 18, 1968.

Rehearing Denied Oct. 10, 1968.

Appeal from decision of Patent Office Board of Appeals, Serial No. 250,025, affirming examiner's rejection of claims. The Court of Customs and Patent Appeals, Smith, J., held that claims 1, 2, 4, 5, 6, and 8, relating to process for stabilizing wax-polyethylene blend as coating for paper or other solid substances, were improperly rejected for obviousness.

Reversed.

1. Patents ☐18

The "judicial treatment" required to determine issue of obviousness of invention begins with evaluation of that issue as of the time the invention was made. 35 U.S.C.A. § 103.

2. Patents ☐18

Obviousness of invention may not be determined by analyzing prior art as though applicant's invention was included therein as part of the knowledge possessed by one of ordinary skill in the art. 35 U.S.C.A. § 103.

Office, *Graham v. John Deere Co.*, 383 U.S. 1 at 18, 86 S.Ct. 684, 15 L.Ed.2d 545.

It would be practically impossible for an applicant to show that all known processes are incapable of producing the claimed compound.

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